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Have Permanent Layoff Rates Increased in Canada?

by René Morissette

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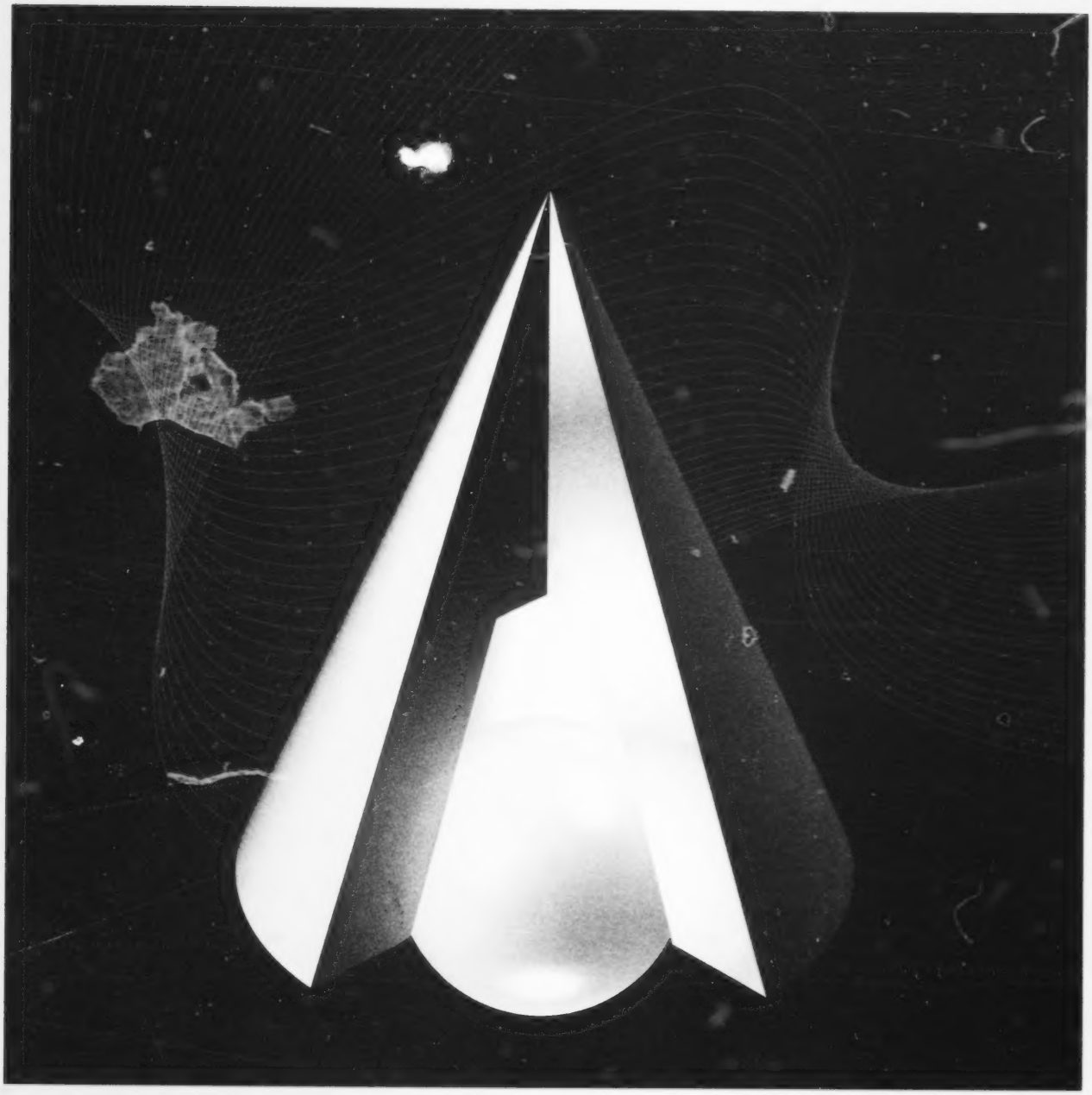

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Table of Contents

I. Introduction 1

II. Recent studies on job stability and job loss 2

III. Data and concepts 2

IV. Permanent layoffs in Canada: 1983-1999 4

IV.1 Context 4

IV.2 Sample selection 4

IV.3 Permanent layoff rates by worker and firm characteristics 5

IV.4 Robustness checks: Taking into account the misreporting of end of contracts and mass layoffs 5

V. Multivariate analysis 6

V.1 Risk of layoff by age and gender 6

V.2 Risk of layoff by industry, firm size and earnings 8

VI. Hiring rates, permanent quit rates and job stability 9

VII. Conclusion 12

I. T4 supplementary forms 39

II. Changes to UI/EI and ROEs 40

III. Constructing a time series of permanent layoff rates 40

IV. Accounting for unsuccessful matches between ROE records and T4 records/LEAP 41

V. Using hours-weighted employment to calculate permanent layoff rates 45

References 50

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ABSTRACT

Using data from the Longitudinal Worker File—a 10% random sample of all Canadian employees—we examine whether permanent layoff rates have increased between the 1980s and the 1990s in Canada. We find little evidence that Canadian workers' chances of being permanently laid-off have risen *substantially* between the 1980s and the 1990s. While the risk of job loss has increased in a non-negligible way in some industries and in large firms of the private sector, men and women of different age groups have generally not experienced drastic increases in their likelihood of being permanently laid-off. However, hiring rates have dropped markedly during the 1990s, especially among young workers. Thus, while Canadians' chances of losing their jobs have not increased substantially, their chances of finding a new job in the event of a layoff—as proxied by hiring rates—appear to have fallen markedly.

The most striking finding of this paper is the widespread drop in permanent quit rates observed during the 1983-1999 period, which likely results, at least partly, from the decrease in hiring rates. Other permanent separations fell moderately. Since permanent layoff rates showed no substantial increase between the 1980s and the 1990s and permanent quit rates fell markedly, rates of permanent separations, taken as a whole, fell in the 1990s. This explains why job stability—as measured by average complete job duration—rose in the 1990s.

Keywords: Layoffs, Job security, Job loss, Job stability, Labour turnover.

I. Introduction

In 1996, the *New York Times* published a series of articles on the "Downsizing of America". The main argument put forward was that more intense competition and computer-based technological changes were inducing many companies to reduce costs and lay off workers, even those with considerable seniority.

In a recent study using data from the 1977-1996 U.S. General Social Survey, Schmidt (1999) showed that during the 1990s, U.S. workers have been more pessimistic about losing their jobs than their counterparts were in the 1980s.

Since the mid-1990s, media reports of mass layoffs in large—and often profitable—companies have not been uncommon. Presumably, globalization has opened new market opportunities for some firms while confronting others with greater competition from abroad.

In this context, many Canadians may ask whether they face greater chances of losing their job than their counterparts did two decades ago. Specifically, one may wonder whether permanent layoff rates in Canada were higher in the 1990s than in the 1980s. The goal of this paper is to answer this question.

To do so, we take advantage of a unique data set. We use the Longitudinal Worker File (LWF), a 10% random sample of all Canadian workers that allows us to examine the evolution of permanent layoffs over the 1983-1999 period for very detailed demographic groups.

Whether permanent layoff rates have increased between the 1980s and the 1990s has important implications for Canadians' well-being. Higher layoff rates may generate greater instability of family earnings, thereby influencing the consumption and savings patterns of families affected by layoffs. They may increase workers' need for training, as more of them would experience job displacement. They would affect retirement income of workers laid-off from companies offering defined-benefit registered pension plans whose benefits cannot be transferred to other plans elsewhere in the economy. Generally, they would imply that many Canadian families would face more uncertainty.

As OECD (1997) suggests, job security can be viewed as a function of two components—the risk of layoff and the costs associated with layoffs (e.g., as measured by earnings losses of displaced workers). The focus of this paper is on the first component. Our main finding is that there is little evidence that permanent layoff rates have risen substantially between the 1980s and the 1990s. However, hiring rates and permanent quit rates have dropped markedly during the 1990s. Thus, while Canadians' chances of losing their jobs have not increased substantially, their chances of finding a new job in the event of a layoff—as proxied by hiring rates—appear to have fallen markedly.

In Section II, we discuss recent studies of job stability and job loss. Next, we present the data and concepts used in the study (Section III). For simplicity, we use the terms layoffs and job loss interchangeably. The evolution of permanent layoff rates is documented in Section IV. Multivariate analyses are presented in Section V. The evolution of hiring rates and quit rates is

examined in Section VI. The consequences of the changes in layoff rates, quit rates and hiring rates for job stability are discussed. A conclusion follows.

II. Recent studies on job stability and job loss

Heisz (2002), the most recent Canadian study on job stability, examines changes in job stability over the 1977-2001 period. He finds that job stability fell between 1977 and 1993, particularly for jobs with initial tenure of less than one year. However, the 1993-2001 period witnessed a reversal of this trend. As a result, there was no long-term trend towards declining job stability among any age, gender or education group during the whole period.

Picot and Lin (1997) provide the most recent Canadian study of job loss. They examine the evolution of permanent layoff rates over the 1978-1994 period. Looking at years which are comparable in the business cycle, they find no upward trend in permanent layoff rates in the aggregate. However, they observe an increase in the probability of permanent layoffs among older and high-paid workers.

Farber (2003, 13) analyzes the incidence of job loss in the United States between 1981 and 2001 and concludes that "while there was no secular increase in overall rates of job loss, there was a secular increase in the rate of job loss for the older and more educated, due largely to an increase in job loss due to position/shift abolished", rather than due to an increase resulting from a rise in plant closings, slack work or other reasons. This pattern is consistent with the "downsizing" notions mentioned above.

A key point to note is that job stability and job loss are two distinct concepts. Studies of job stability implicitly incorporate information about *both* layoff rates (rates of job loss) and quit rates. Job stability—measured by average job duration or retention rates—could remain unchanged if an increase in layoff rates was accompanied by a decrease in quit rates.[1] This could occur if an increase in rates of job loss occurred in conjunction with a decrease in hiring rates or triggered perceptions of growing economic insecurity among workers, thereby inducing many of them to remain in their job. Thus, the absence of long-term trend towards declining job stability—documented by Heisz (2002)—is not inconsistent, a priori, with an increase in permanent layoff rates.

III. Data and concepts

The data set used to measure the evolution of layoff rates is the Longitudinal Worker File (LWF) created by the Business and Labour Market Analysis (BLMA) Division of Statistics Canada. The LWF is a 10 percent random sample of all Canadian workers, constructed by integrating data from four sources: the Record of Employment (ROE) files of Human Resources Development Canada (on worker separations), the T1 and T4 files of Canada Customs and Revenue Agency, and the Longitudinal Employment Analysis Program (LEAP) of BLMA, Statistics Canada.[2]

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[1] Retention rates refer to the conditional probability that a job of any given length will last another year.

[2] LEAP is a longitudinal file on Canadian businesses at the company level.

The Employment Insurance Act and its Regulations require every employer to issue a ROE when an employee working in insurable employment has an interruption in earnings. The information contained on the ROE is used to determine if a person qualifies for Employment Insurance (EI) benefits, the benefit rate and the duration of his/her claim. The ROE must be issued even if the employee does not intend to file a claim for EI benefits. More importantly, it indicates the reason for the work interruption or separation.[3] The ROE can thus be used to generate counts of separations of workers from firms by reason.

In addition, all employers must register with Canadian Customs and Revenue Agency and issue to each employee a T4 slip that summarizes earnings received in the year. The T4 files provide information on virtually all Canadian workers. Thus, the number of workers at risk of separation are known from the T4 files while the number of workers who actually separate are known from the ROE files.

In the LWF, job separations are classified into three categories (quits, layoffs and other separations) according to the reason for separation indicated in the ROE. Layoffs are separations due to shortage of work. Permanent layoffs are defined as those that occur when the separated worker does not return to the same employer in the same or following year.[4] Other separations include those that result from a strike or lock-out, a return to school, illness or injury, pregnancy and adoption, retirement, work sharing, apprentice training, dismissal as well as those resulting from *other reasons not listed in the ROE.*

Permanent separation rates (i.e. quit rates, layoff rates and other permanent separation rates) are calculated as the number of permanent separations divided by employment at any point in time during the year (i.e. the total number of person-jobs).

The hiring rate is the number of hires divided by total employment in the year. The number of hires H_t is calculated as the sum of all permanent separations in year t-1, S_{t-1}, and the net change in employment between year t-1 and year t, $E_t - E_{t-1}$. Thus, the number of hires is determined residually by adding replacement demand (the number of permanent separations) and expansion demand (the net increase in employment).

The LWF, with its very large sample size, allows the possibility of very detailed sub-sample level analysis of job separations (e.g. by detailed age group, firm size, province or industry). Below, we take advantage of this large sample size by conducting separate multivariate analyses for various age-gender groups, industries and size classes.[5]

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[3] A penalty under the Employment Insurance Act for non-compliance may apply to employers who fail to issue a ROE. Moreover, employers who enter a false or misleading reason for a separation may be subject to penalty or prosecution.

[4] It is the use of LEAP that allows us to distinguish permanent separations from temporary separations. A temporary separation occurs when the separated worker returns to the same employer in the same or following year. The T1 files allow us to measure the age and gender of workers.

[5] While all multivariate analyses and cross-tabulations presented in this study use the 10% version of LWF, some descriptive statistics presented in footnotes and in Appendix 1 use the 1% version of LWF. These exceptions are noted.

IV. Permanent layoffs in Canada: 1983-1999

IV.1 Context

Since the concept of permanent layoff applies only to Canadian workers who are employees—and not to those who are self-employed—it is worth examining the relative importance of employees in total employment over the last two decades.

Figure 1 shows that the percentage of workers who are self-employed rose from 12% in 1976 to 15% in 2002. It varied between 14% and 17% during the 1983-1999 period. Thus, employees accounted for between 83% and 86% of total employment over the period considered.

Permanent layoffs are counter-cyclical, rising in recessions and falling during expansion periods. In order to detect structural changes in permanent layoff rates, we need to compare years that are roughly at the same point in the business cycle. Over the period of study, the Canadian economy saw two full business cycles, as witnessed by the movements in the unemployment rate of men aged 25-54, shown in Figure 1. This unemployment rate was very similar in 1989 and 1999, amounting to 6.3% and 6.5%, respectively. Furthermore, the aggregate unemployment rate in 1999 was 7.6%, very close to the value of 7.5% observed in 1989. Therefore, most of the ensuing analysis will assess whether permanent layoff rates in 1999 were higher than those in 1989.

IV.2 Sample selection

To build a consistent time series of permanent layoff rates, both the set of jobs for which employers issue a T4 slip and the set of jobs for which employers are required to issue a ROE must be fairly constant over time. As Appendix 1 shows, the set of jobs for which employers are required to issue T4 slips has changed slightly during the 1983-1999 period and changes to the (Un)Employment Insurance system have modified the set of jobs for which employers are required to issue ROEs.

For reasons detailed in Appendix 1, we select jobs that provide an annual wage of at least $500 in 1989 constant dollars (or $621 in 1999 constant dollars) in order to measure permanent layoffs on a consistent basis. Figure 2 shows the resulting permanent layoff rates. Following the 1981-82 recession, permanent layoff rates fell, reaching a low of 5.9% in 1989. They rose again with the 1990-92 recession but ended the 1990s at a value of 5.7%. Thus, they were no higher in 1999 than in 1989.

To assess the robustness of our results, we also examine trends in permanent layoff rates using 5 additional cutoffs ranging from $1,000 to $5,000 (in 1989 constant dollars). Figure 3 shows that whatever cutoff is used, permanent layoff rates display no upward trend (although the values of the permanent layoff rates fall as higher cutoffs are used). Hence, for the remainder of the paper, the sample selected will consist of jobs paying an annual wage of at least $500 in 1989 constant dollars.

IV.3 Permanent layoff rates by worker and firm characteristics

Table 1 shows separation rates for all three types of permanent separations (quits, layoffs and other separations) as well as hiring rates and temporary layoff rates over the 1983-1999 period. Three points are worth noting. First, like permanent layoff rates, temporary layoff rates were very similar in 1989 and 1999. Second, hiring rates were generally lower during the second half of the 1990s than they were during the second half of the 1980s. Third, permanent quit rates were equal to only 7.3% in 1999, almost 2 percentage points lower than their value in 1989.

Table 2 and Figures 4.1 to 4.6 examine whether specific groups of workers have experienced an increase in permanent layoff rates over the period. Looking across groups defined in terms of age and gender, permanent layoff rates in 1999 were at least half a percentage point higher than in 1989 only for men aged 55-64 and women aged 35-44. This corresponds to increases of 10% and 16% in *relative* terms respectively. For all other age-gender groups, there was no sizeable increase in layoff rates.

Compared to 1989, permanent layoff rates in 1999 were, in the aggregate, at least half a percentage point higher in business services and distributive services. However, they increased neither in manufacturing nor in primary industries/construction. These qualitative patterns are observed for both men and women.

In large firms of the private sector—those with 500 or more employees operating in all industries except public services—permanent layoff rates rose between 1989 and 1999. They increased from 3.3% to 4.0% for men and from 1.9% to 2.5% for women. In contrast, permanent layoff rates in firms with less than 20 employees—which are at least three times higher than those in large firms (except in 1999)—showed no increase during the 1989-1999 period.

While permanent layoff rates of highly paid male workers (those paid $50,000 or more in the year prior to the layoff) do not appear to have risen, the raw data provide some evidence of rising layoff rates among highly paid women.

The only sizable increases in job loss took place in Newfoundland and Prince-Edward Island, which saw their permanent layoff rates rise by about 2 percentage points between 1989 and 1999.[6] Meanwhile, none of the provinces west of Nova Scotia experienced an increase in permanent layoff rates.

Hence, for most workers and most provinces, permanent layoff rates were no higher at the end of the 1990s than they were at the end of the 1980s.

IV.4 Robustness checks: Taking into account the misreporting of end of contracts and bankruptcies

When they issue a ROE, employers should normally report the termination of employment contracts and layoffs that result from bankruptcies in category A, which is titled "shortage of work". This is the category used in this study to measure layoffs.

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[6] In both provinces, the increase in permanent layoff rates is statistically significant at the 1% level (two-tailed test).

However, some firms may erroneously report end of contracts and bankruptcies in category K, a residual category capturing separations that result from *reasons not listed in ROEs*.[7] Ideally, we would like to include these misreported contracts and bankruptcies in our measure of permanent job loss. Unfortunately, it is impossible, in our data set, to identify these separations among all those separations that are reported in category K.

To ensure that our findings regarding trends in permanent layoff rates are robust, we proceed in two steps. First, we calculate permanent separation rates associated with category K. For all age-gender groups except men aged 25-34, these permanent separation rates were no higher in 1999 than in 1989 (Table 3). For men aged 25-34, they were almost identical during these two years.

Second, we calculate an "augmented" permanent separation rate that is the sum of permanent layoffs and permanent separations associated with category K. When we do so, we find that between 1989 and 1999, no group of workers (defined in terms of age and gender) experienced an increase in their augmented permanent separation rate of more than 0.4 percentage point (Table 4).

Taken together, Tables 3 and 4 confirm the main finding of Section IV.3, i.e. that many Canadian workers were no more at risk of losing their job in 1999 than their counterparts were in 1989.

V. Multivariate analysis

V.1 Risk of layoff by age and gender

To assess whether the patterns described above hold for workers of similar ages holding comparable jobs, we run logit models that estimate workers' probability of being laid-off in a given year. Separate regressions are run for each of the 10 age-gender groups defined above. The dependent variable equals 1 when a job ends with a permanent layoff, 0 otherwise.

For each age-gender group, we use two models. The first model includes the following set of regressors: age, age squared, province and a vector of year effects covering the 1983-1999 period (1989 being the omitted category). The second model adds controls for industry (6 categories) and firm size (4 categories).[8]

For all logit models presented in this study, the extent to which workers' probability of being laid-off has risen between 1989 and 1999, ΔP_{1999}, is evaluated around the permanent layoff rate observed in 1989, P_{1989}, using the following formula [Gunderson et al. (1986:267)]:

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[7] Such misreporting could occur even though the ROE guide from 1989 to 1996 specifies that category A should be used, among other things, to report "[...] job completed or employment contract terminated". In 1999, the ROE guide requests employers to enter in code K reasons other than those listed in a table accompanying the ROE form. The reasons listed in the table that accompanies the ROE form include : A) shortage of work, E) quits and the other reasons defined in section III.

[8] We deliberately avoid including interaction terms between covariates and year effects because we want any increase in workers' probability of being laid-off to be captured by intercept shifts, thereby measuring an "average" increase in probability across years.

(1) $\Delta P_{1999} = [1+\exp(-x'b - b_{1999})]^{-1} - P_{1989}$

where $x'b = \ln[P_{1989}/(1-P_{1989})]$ and b_{1999} is the coefficient for the year 1999.

This amounts to performing the following conceptual experiment. First, select a worker whose probability of being laid-off in 1989 equals the average permanent layoff rate of his/her age-gender group during that year. Then, ask the following question: What would be this worker's probability of being laid-off in 1999?

It is important to emphasize that these multivariate analyses are conducted using extraordinary sample sizes. The number of observations used in these logit models varies between 711,562 for women aged 55-64 and 4,323,671 for men aged 25-34. The results are presented in Table 5.[9]

Model 1 shows that between 1989 and 1999, the probability of being permanently laid-off has increased—in a statistically significant sense (at the 5% level)—for men aged 35-44 and those aged 55-64. However, the increases are modest, amounting to 0.3 and 0.6 percentage point, respectively.[10] Women aged 25-34 and 35-44 also experienced increased chances of losing their jobs since their probability of being permanently laid-off rose by 0.3 and 0.5 percentage point, respectively. Although moderate in absolute terms, the increase observed for women aged 35-44 is not negligible in *relative terms*, amounting to 16% (since their permanent layoff rate was equal to 3.2% in 1989). In contrast, men aged 15-24 saw their risk of job loss fall by 1 percentage point. Hence, only men aged 55-64 and women aged 35-44 saw their risk of job loss increase by at least half a percentage point between 1989 and 1999.

Can changes in the distribution of employment by industry and firm size account for a big portion of the increased risk of job loss experienced by men aged 55-64 and women aged 35-44? The answer is no. Most of the increase in job loss observed for these two groups remains when controls for industry and firm size are added (Model 2). A similar conclusion holds for women aged 25-34.

In contrast, compositional effects account for all the increased risk of job loss faced by men aged 35-44. The reason is that their probability of being permanently laid-off no longer increases once we control for industry and firm size.

The risk of job loss rises by about 0.5 percentage point for workers—both men and women—aged 45-54 after controlling for industry and firm size. Since virtually no increase in the likelihood of job loss was observed for these workers in Model 1, this suggests that changes in

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[9] Detailed regression results of Model 1 are shown in Appendix 2 while those of Model 2 are available upon request. It is worth noting that among men and women aged 15 to 24, the probability of being permanently laid-off *increases* with age (at a decreasing rate). This could occur if many employees aged 15 to 19 were students working part-time and unlikely to be laid-off in their job and if many of those aged 20 to 24 were individuals who had completed their school-to-work transition and had little seniority in their job. As expected, the probability of being permanently laid-off *decreases* with age (also, at a decreasing rate) for workers aged 25 and over.

[10] The increase of 0.2 percentage point observed among men aged 45-54 is statistically significant at the 6% level (two-tailed test).

the distribution of employment by industry and firm size—that occurred between 1989 and 1999—tended to *decrease* layoff rates of these workers.[11]

Taken together, both the descriptive evidence presented in Section IV and the statistical models used in this section provide little evidence that Canadian workers' chances of losing their jobs have increased *substantially* between the 1980s and the 1990s. This conclusion holds in Table 6, where we run logistic regressions modeling workers' probability of being permanently laid-off *or* of permanently separating from their employer for reasons not listed on ROEs, i.e. for reasons associated with category K.[12]

V.2 Risk of layoff by industry, firm size and earnings

While only men aged 55-64 and women aged 35-44 saw their risk of job loss increase by at least half a percentage point between 1989 and 1999, some segments of the Canadian economy may have experienced growing risks of layoff. We investigate this issue in three ways.

First, we ask whether men and women of a given age and employed in a given industry were more likely to be permanently laid-off in 1999 than in 1989. To answer this question, we run separate logit models of workers' probability of being laid-off for each of the six industrial groups used in Table 2. Next, we ask whether men and women of a given age and employed in a private sector firm of a given size were more likely to be permanently laid-off in 1999 than in 1989. We estimate separate models for each of the four size classes used in Table 2. For each of these models, our control variables include age, age squared, province and a vector of year effects.[13]

Finally, we ask whether highly paid workers (those earning $50,000 or more—in 1999 constant dollars—in the year preceding the layoff) employed in a firm of a given size in a given industry have seen their chances of being laid-off rise over time. Separate models are used for workers employed in all industries and those employed in the private sector.[14]

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[11] Of all women aged 45 to 54, 38% were employed (as measured by the number of person-jobs observed in a given year) in public services in 1989. This fraction rose to 44% in 1999 (Longitudinal Worker File: 1% version). The growing proportion of women aged 45 to 54 in public services—a sector with a lower-than-average permanent layoff rate—likely explains why changes in the risk of layoff differ between Model 1 and Model 2 for this group.

[12] The dependent variable equals 1 if a worker is permanently laid-off or separates from the firm for reasons not listed on ROEs, 0 otherwise.

[13] When asking these two questions, our goal is to assess whether workers of a given age have experienced growing chances of job loss in a given industry *or* in a firm of a given size—but not in a given industry *and* firm size. This is why we do *not* control for firm size when we estimate industry-specific models and why we do not control for industry when we run firm size-specific models. However, the main findings obtained with these models—i.e. that the risk of job loss rose in distributive services, business services, public services and among large private sector firms—hold when we use alternative specifications that include these additional controls.

[14] In this study, the private sector refers to all industries except public services. These models include the following explanatory variables: age, age squared, industry, firm size, province and a vector of year effects.

In all cases (i.e. whether we estimate separate models by industry, firm size or for highly paid workers), we restrict our attention to workers aged 15 to 64. All models are run separately for men and women. Thus, we estimate 24 models. The results are presented in Table 7.[15]

Three key findings emerge from these models. First, some industries did experience growing risks of job loss. While the risk of permanent layoff has generally decreased in goods-producing industries and changed very little in consumer services, it has risen by at least half a percentage point in distributive services, business services and public services.[16]

Second, large firms in the private sector—who often capture media attention when they implement mass layoffs— laid off workers at a greater rate in 1999 than in 1989. The risk of permanent layoff in large firms of the private sector rose by 0.7 percentage point for men and 0.6 percentage point for women. This is not negligible since it represents an increase of at least 20% in *relative* terms (the permanent layoff rate in large firms in 1989 being equal to 3.3% for men and 1.9% for women).[17] In 1999, large firms accounted for one third of private sector employment.[18]

Third, highly paid women employed in the private sector also experienced an increase of at least half a percentage point in their risk of layoff. Since their permanent layoff rates in 1989 was only 1%, their chances of being laid-off remained fairly low by the end of the 1990s. We find no evidence of rising chances of being laid-off for highly paid male workers.

Hence, while permanent layoff rates did not rise substantially between the 1980s and the 1990s in the aggregate, workers in some sectors of the Canadian economy did experience growing chances of losing their jobs.

VI. Hiring rates, permanent quit rates and job stability

Picot and Lin (1997) showed that in the first half of the 1990s, hiring rates were relatively low compared to the levels they displayed following the 1981-82 recession. Figure 5.1 confirms this view. During the 1995-1999, hiring rates in Canada averaged 21%, much lower than the rate of 25% observed during the 1985-1989 period (Table 1).

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15 Detailed regression results are available upon request.

16 The careful reader may wonder why the risk of permanent layoff in public services rose by 0.7-0.8 percentage point *for workers of a given age* while permanent layoff rates in this sector rose by only 0.3 percentage point between 1989 and 1999 (Table 2). One explanation is that, between 1989 and 1999, the average age of employees rose substantially in public services (it increased from 36.1 to 39.6 years, compared to 32.2-35.0 years in the private sector: Longitudinal Worker File: 1% version). Since older workers generally have relatively low layoff rates, this tended to decrease permanent layoff rates in public services. This effect has been more than offset by a growing risk of layoff *for workers of a given age*, thereby generating the modest increase in permanent layoff rates shown in Table 2.

17 In contrast, men employed in firms with less than 500 employees and women employed in small firms saw their risk of permanent layoff fall between 1989 and 1999. Recall that permanent layoff rates in large firms of the private sector rose from 3.3% to 4.0% for men and from 1.9% to 2.5% for women between 1989 and 1999 (Table 2).

18 As calculated from the 1% version of LWF.

In most provinces, hiring rates were substantially lower during the second half of the 1990s than during the second half of the 1980s. For instance, hiring rates in Ontario in were about 21% in 1997-98, fully 4 percentage points below their levels in 1987-1988 (Table 8). Hiring rates in British Columbia were 20% in 1998, a solid 10 percentage points lower than their value in 1988. The drop in hiring rates suggests that while chances of being permanently laid-off did not rise substantially between the 1980s and the 1990s, chances of finding a new job in the event of a layoff might have been considerably lower.

Hiring rates fell much more in small firms than in large firms. In firms with less than 20 employees, average hiring rates fell 23% between the 1985-1989 period and the 1995-1999 period (Table 9, Figures 5.2-5.3). In contrast, they fell only 4% in large firms during these two periods.

The drop in hiring rates was not uniform across age groups. Workers aged 25-34—both men and women—saw their average hiring rates fall by at least 15% between 1985-1989 and 1995-1999 (Table 10, Figures 5.4-5.5). In contrast, men aged 45-54 experienced a 10% *increase* in their hiring rates between the two periods.

If labour market opportunities—as measured by hiring rates—were lower in the 1990s, one might expect employees to quit their job less frequently in the 1990s than their counterparts did in the 1980s. Figure 6 and Table 11 support this contention. Between 1989 and 1999, permanent quit rates in Canada fell from 9.2% to 7.3%. Decreases in workers' propensity to quit were widespread. They were observed among all age groups, all major industrial groups, all size classes and in most provinces—the only exceptions being Prince-Edward Island and New Brunswick. In *absolute* terms, permanent quit rates fell the most in Ontario and British Columbia, where they dropped by 3.1 and 2.5 percentage points, respectively. In *relative* terms, they fell by at least 25% in these two provinces as well as in Newfoundland.

The drop in quit rates was not simply due to the aging of the workforce. For all age groups, logit models of permanent quits still show a substantial decrease in workers' probability of quitting even after controlling for workers' age (age squared and province of work) (Table 12, Model 1). Between 1989 and 1999, the probability of quitting fell between 0.7 and 2.2 percentage points for women and between 0.4 and 1.9 percentage points for men. For most age groups, adding controls for industry and firm size did not attenuate these decreases. In fact, the probability of quitting fell between 16% and 21%—in *relative* terms—for workers aged 35-54 when these controls were added.[19]

Since it is well known that people with longer seniority tend to quit less—likely reflecting a good match between job requirements and employees' skills—one might argue that the decrease in quit rates is simply due to growing levels of seniority within age groups. Data from the Labour Force Survey show that this argument does not hold for men. In 1999, average levels of seniority of men were, in all age groups, no higher than those in 1989 (Table 13). In contrast, women aged 35 and over had more seniority in 1999 than their counterparts had in 1989. Thus, part of the decrease in quit rates of women could be due to growing levels of seniority.

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[19] They fell even more for men aged 55-64 (-24%) and for women aged 55-64 (-33%).

The fact that quit rates of men aged 45-54 fell while their hiring rates *increased* suggests that other factors may have contributed to decreasing quit rates. For instance, Kuhn and Sweetman (1998) have shown that legislative changes introduced to the (Un)Employment Insurance System in 1993—eliminating the UI eligibility of workers quitting without just cause—have reduced the propensity to quit for young workers (those aged 15-24) and for women aged 25 to 54.[20]

Hence, while permanent layoff rates generally showed no substantial increase between the 1980s and the 1990s, permanent quit rates fell markedly. Since other permanent separations fell moderately (dropping from 7.2% in 1989 to 6.0% in 1999), permanent separations taken as a whole (i.e. the sum of permanent layoffs, permanent quits and other permanent separations) fell in the 1990s (Figure 7). This explains why job stability—as measured by average complete job duration—rose in the 1990s (Figure 8), a result documented by Heisz (2002).[21]

To assess the extent to which the decline in quits explains the increase in job stability observed between 1989 and 1999, we proceed as follows. First, we estimate logit models of layoffs, quits and other separations for the 1983-1999 period. In these models, the set of explanatory variables is the following : age groups (15 to 24, the omitted category; 25 to 34, 35 to 44, 45 to 54 and 55 to 64), gender, province, industry (6 categories), firm size (4 categories), a full set of gender interaction terms and a vector of year effects (1989 being the year omitted). For each of the three logit models, we use equation (1) to calculate the marginal effect associated with the year 1999, i.e. the change in the probability of being laid-off, quitting or leaving the firm for other reasons that occurs between 1989 and 1999. After adding this marginal effect to the permanent separation rates observed in 1989, we obtain the probability of a permanent separation in 1999 (conditional on the regressors defined above).

The first line of Table 14 shows the permanent separation rates observed in 1989. The second line shows that average complete job duration, calculated from these separation rates assuming an exponential survivor function, equals 47.6 months in 1989. The third line presents the probability of permanent separations in 1999 obtained from the three logit models defined above. The numbers confirm the big decline —between 1989 and 1999—in workers' propensity to quit and the moderate decline in their propensity to leave for other reasons. The fourth line shows that, after controlling for age, gender, province, industry and firm size, average complete job duration increased from 47.6 months in 1989 to 52.9 months in 1999. Thus, holding constant worker and job characteristics, job stability —as measured from LWF—rose 11% between 1989 and 1999.

In the fifth and sixth lines, we ask the following question : controlling for the aforementioned worker and job characteristics, by how much would job stability have risen between 1989 and

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[20] Kuhn and Sweetman (1998, 570) conclude that "The magnitude of the reductions is quite large for women: relative to the baseline period, the quit rate drops by 12-18 per cent in the short run and roughly 30 per cent in the long run. In striking contrast, prime age males' separation behaviour seems unaffected by the legislation."

[21] Following Picot, Heisz and Nakamura (2001, 8), we compute average complete job duration as follows. Assuming an exponential survivor function, job duration can be estimated by $1/\lambda$, where $\lambda = -\ln(R)/t$, where R is the average retention rate for workers and t, the time interval used here, is equal to 1 year. The average retention rate R is simply 1-(the probability of permanent separation). Labour Force Survey data indicate that average complete job duration rose 25% between 1985-89 and 1995-99. The corresponding increase obtained with LWF is 20%.

1999 if the probabilities of being laid-off and of separating for other reasons had remained unchanged and the probability of quitting had been equal to its 1999 value? The answer is that, under these conditions, average complete job duration would have increased from 47.6 months in 1989 to 51.2 months in 1999, an increase of 7.6%. Hence, the decline in workers' propensity to quit appears to account for 68% (7.6% / 11%) of the increase in job stability between 1989 and 1999.

It is important to emphasize that this increase in job stability should not necessarily be viewed as a positive development *if* the decrease in permanent quit rates results partly from a decrease in hiring rates, i.e. from lower labour market opportunities. Admittedly, an increase in job stability resulting from falling labour market opportunities has quite different implications for workers' well-being than an increase in job stability resulting from a growing supply of permanent well-paid jobs.

VII. Conclusion

Our goal in this paper was to assess whether permanent layoff rates had risen substantially between the 1980s and the 1990s. We have found little evidence that permanent layoff rates have risen *substantially* in Canada over the last two decades. While the risk of job loss has increased in a non-negligible way in some industries and in large firms of the private sector, men and women of different age groups have generally not experienced drastic increases in their likelihood of being permanently laid-off. Only men aged 55-64 and women aged 35-44 have seen their chances of being permanently laid-off rise by at least half a percentage point.

These numbers are averages that reflect aggregate patterns for the whole Canadian economy and do not necessarily apply to all sectors of the Canadian labour market. For instance, examination of provincial data has revealed that two provinces—Newfoundland and Prince-Edward-Island—have experienced substantial increases in layoff rates between 1989 and 1999. Furthermore, there is little evidence that permanent layoff rates have *decreased* despite the increase in the educational attainment of Canadian employees between the 1980s and the 1990s. Since highly-educated workers generally have lower chances of being permanently laid-off than their low-educated counterparts (Galarneau and Stratychuk, 2001), this suggests that permanent layoff rates of some groups—e.g. workers with no high school diploma—may well have risen during this period. Likewise, temporary layoff rates —another indicator of job precariousness— did rise at least half a percentage point for men aged 35 and over, for women aged 35 to 44 as well as those aged 55 to 64 between 1989 and 1999 (Table 15).

The most striking finding of this paper is the widespread drop in permanent quit rates observed during the period. It seems reasonable that argue that part of the decrease in quit rates was due to the decrease in hiring rates that took place in the 1990s. Thus, while chances of losing one's job have generally not risen substantially over the last two decades, chances of finding a new job in the event of a layoff may—because of the drop in hiring rates—have fallen markedly.

The drop in hiring rates may have increased the duration of unemployment spells experienced by displaced workers. It may also have lowered the wages they receive in their new job, as compared to those received by their counterparts in the 1980s. In both cases, earnings losses of displaced workers would then have risen between the 1980s and the 1990s. Future research should address this issue.

Table 1: Separation and hiring rates (%) in Canada, 1983-1999*

Year	Permanent separations				(5)	(6)
	(1) Layoffs	(2) Quits	(3) Other	(4) All	Hiring rates	Temporary layoff rate
1983	7.7	5.4	6.5	19.5	-	9.6
1984	7.5	6.1	7.3	20.8	22.6	9.3
1985	7.0	7.0	7.3	21.3	24.6	8.5
1986	6.7	7.5	7.3	21.5	24.2	8.3
1987	6.4	8.7	7.3	22.4	25.3	7.8
1988	6.1	9.4	7.3	22.8	25.8	7.4
1989	5.9	9.2	7.2	22.3	25.0	7.3
1990	6.9	7.9	7.4	22.1	21.2	8.6
1991	7.2	5.8	7.1	20.2	17.7	9.5
1992	7.1	5.0	6.9	19.0	17.3	9.7
1993	6.8	4.8	6.8	18.4	18.0	9.3
1994	6.5	5.5	6.8	18.7	20.1	8.5
1995	6.5	5.4	6.8	18.6	19.1	9.0
1996	6.4	5.3	6.4	18.1	18.7	9.2
1997	6.4	6.2	6.0	18.6	23.3	8.5
1998	6.3	6.9	5.8	18.9	21.6	8.6
1999	5.7	7.3	6.0	19.1	21.8	7.8

* Jobs paying at least $500 in 1989 constant dollars.
Source: Longitudinal Worker File (10% version).

Table 2: Permanent layoff rates in Canada, by various characteristics, 1983-1999 (%)*

Year	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
All workers	7.7	7.5	7.0	6.7	6.4	6.1	5.9	6.9	7.2	7.1	6.8	6.5	6.5	6.4	6.4	6.3	5.7
Men	9.7	9.3	8.8	8.5	8.1	7.8	7.7	9.0	9.4	9.2	8.8	8.4	8.5	8.3	8.1	8.1	7.5
Women	5.0	5.0	4.6	4.4	4.2	4.0	3.8	4.4	4.6	4.7	4.5	4.3	4.2	4.3	4.5	4.2	3.9
Men 15-24	11.8	11.4	10.4	9.8	9.2	8.7	8.3	9.7	10.2	9.9	9.5	9.0	9.2	9.0	8.4	8.5	7.6
Men 25-34	10.5	9.9	9.4	9.3	8.7	8.3	8.1	10.0	10.5	10.3	9.8	9.2	9.1	8.9	8.7	8.6	7.8
Men 35-44	8.3	8.1	7.6	7.5	7.3	7.1	7.1	8.2	8.7	8.6	8.3	7.9	8.0	7.8	7.9	7.9	7.3
Men 45-54	7.7	7.6	7.4	7.2	6.8	6.7	6.7	7.6	7.9	7.7	7.6	7.2	7.4	7.3	7.4	7.4	7.0
Men 55-64	7.1	7.2	7.2	6.9	6.9	6.9	7.4	8.0	8.5	8.2	8.1	8.1	8.4	8.2	8.3	8.3	8.1
Women 15-24	6.3	6.6	5.8	5.4	4.9	4.7	4.3	4.8	5.2	5.4	5.2	5.0	5.1	5.3	5.1	4.7	4.3
Women 25-34	5.0	4.9	4.6	4.6	4.4	4.2	4.0	4.7	5.0	5.1	4.9	4.7	4.5	4.7	5.0	4.7	4.2
Women 35-44	3.9	4.0	3.9	3.5	3.5	3.5	3.2	3.9	4.2	4.2	4.0	3.8	3.8	3.8	4.3	3.9	3.7
Women 45-54	3.9	3.7	3.6	3.5	3.3	3.3	3.1	3.7	3.9	3.9	3.7	3.4	3.3	3.4	3.7	3.4	3.3
Women 55-64	3.9	3.9	3.6	3.4	3.5	3.6	3.5	4.1	4.3	4.6	4.5	4.2	3.8	3.9	4.3	3.9	3.6
By province																	
Newfoundland	16.1	16.7	17.2	16.1	16.9	15.7	15.8	15.6	17.0	18.5	17.2	15.5	14.0	15.1	14.8	16.9	18.0
Prince-Edward Island	12.2	12.6	12.4	11.9	11.8	11.7	12.2	11.0	12.7	12.8	12.0	12.7	12.3	16.1	14.9	14.3	14.3
Nova Scotia	8.7	9.2	9.1	8.6	8.4	8.3	8.2	8.7	8.7	8.9	8.7	8.4	8.9	7.8	8.4	8.6	8.7
New Brunswick	12.0	12.5	11.8	11.7	11.7	10.9	11.4	11.8	11.9	11.9	12.4	11.5	11.8	11.9	11.8	11.6	11.2
Quebec	8.5	8.8	8.3	7.5	7.6	7.6	7.3	8.1	8.3	8.2	7.7	7.6	7.5	7.5	8.0	7.3	6.5
Ontario	5.6	5.2	4.8	4.3	4.1	3.8	3.9	5.2	5.5	5.3	4.9	4.5	4.6	4.7	4.7	4.4	3.9
Manitoba	5.4	5.4	5.1	5.3	5.0	4.8	4.4	5.1	5.2	4.9	5.3	4.7	4.7	4.7	4.5	4.5	4.4
Saskatchewan	6.6	6.4	6.1	6.4	6.6	6.8	5.7	5.7	6.5	7.1	6.3	5.6	5.8	5.4	5.5	6.0	5.5
Alberta	9.9	8.8	7.5	8.6	7.2	6.7	6.1	6.5	7.1	7.2	7.3	6.9	6.9	6.2	5.6	6.4	5.9
British Columbia	9.4	9.2	9.1	9.1	8.2	7.8	7.2	8.0	8.3	7.7	7.8	7.6	7.7	7.5	7.4	7.3	6.7
By industry																	
Primary & construction	23.6	23.6	22.1	22.0	21.1	20.9	20.5	23.1	23.8	23.6	23.1	22.2	22.5	21.8	20.7	21.4	20.0
Manufacturing	7.4	7.1	6.7	6.4	5.7	5.7	5.9	7.7	8.0	7.7	6.9	6.4	6.6	6.4	6.1	6.2	5.4
Distributive services	5.5	5.4	5.3	5.2	5.2	4.4	4.2	5.6	6.0	6.1	5.8	5.3	5.2	5.1	5.3	5.3	4.8
Business services	6.1	5.6	5.5	5.1	4.6	4.5	4.2	5.4	5.9	5.9	5.6	5.3	5.5	5.2	5.4	5.3	5.1
Consumer services	7.5	7.3	6.4	6.1	5.4	5.0	4.4	5.0	5.9	6.0	5.8	5.5	5.5	5.5	5.2	5.1	4.7
Public services	2.5	2.7	2.6	2.2	2.4	2.2	2.0	2.2	2.3	2.3	2.6	2.4	2.2	2.4	3.3	2.4	2.3
By firm size																	
1-19 employees	13.7	13.6	12.6	12.0	11.4	10.9	10.2	11.5	12.0	12.2	12.0	11.4	11.3	11.0	10.6	10.4	9.6
20-99 employees	9.9	9.7	9.0	8.7	7.9	7.8	7.6	9.1	9.5	9.3	8.6	8.3	8.6	8.3	8.0	8.1	7.3
100-499 employees	7.3	6.9	6.2	6.0	5.8	5.9	6.0	7.0	7.5	6.7	6.0	5.8	6.0	6.0	6.2	6.0	5.3
500 or more employees	3.4	3.1	3.0	2.8	2.7	2.4	2.4	2.8	3.0	3.0	2.9	2.7	2.6	2.8	3.1	2.8	2.7
By earnings**																	
Less than $20,000	10.5	10.8	10.0	9.3	8.9	8.4	7.9	8.8	9.4	9.8	9.9	9.4	9.3	9.0	8.8	8.3	7.6
$20,000 - $50,000	5.3	4.3	4.3	4.4	4.1	4.1	4.3	5.4	5.6	5.1	4.5	4.1	4.4	4.5	4.7	4.7	4.4
$50,000 or more	4.1	2.9	1.9	2.3	1.9	2.1	2.4	3.4	3.5	2.8	2.1	1.8	1.7	2.3	2.2	2.5	2.2

* Jobs paying at least $500 in 1989 constant dollars.

**: Total annual earnings (in 1999 constant dollars) in the year prior to the layoff.

Source: Longitudinal Worker File (10% version).

Table 2 (concluded): Permanent layoff rates in Canada, by various characteristics, 1983-1999 (%)*

Year	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
Industry: Men 15-64																	
Primary & construction	25.4	25.3	23.6	23.4	22.5	22.3	22.2	25.3	26.3	26.0	25.2	24.2	24.6	23.8	22.8	23.7	22.2
Manufacturing	7.8	7.2	6.9	6.6	5.9	5.7	6.1	7.8	8.2	7.8	7.0	6.5	6.8	6.5	6.1	6.2	5.5
Distributive services	5.7	5.6	5.5	5.4	5.3	4.6	4.4	5.9	6.3	6.3	6.1	5.6	5.4	5.4	5.4	5.5	5.0
Business services	8.1	7.3	7.4	7.0	6.1	6.0	5.6	7.0	7.8	7.8	7.0	6.8	7.1	6.7	6.7	6.5	6.2
Consumer services	9.2	8.9	7.8	7.2	6.3	5.8	5.0	5.9	7.1	7.0	6.9	6.4	6.5	6.5	6.2	6.1	5.5
Public services	3.0	3.2	3.0	2.6	2.8	2.4	2.3	2.4	2.6	2.7	3.0	2.8	2.6	2.6	3.3	2.6	2.7
Industry: Women 15-64																	
Primary & construction	14.6	14.4	14.4	14.9	14.0	14.0	12.7	13.2	13.7	14.1	14.0	13.4	13.1	12.9	11.7	11.9	11.6
Manufacturing	6.8	6.9	6.4	6.0	5.2	5.5	5.7	7.4	7.5	7.4	6.6	6.2	6.1	6.2	5.8	6.2	5.3
Distributive services	5.0	5.1	4.7	4.6	5.0	3.9	3.8	4.9	5.5	5.8	5.0	4.5	4.7	4.3	4.9	4.7	4.2
Business services	4.4	4.2	4.0	3.7	3.4	3.4	3.2	4.2	4.5	4.6	4.5	4.2	4.3	4.0	4.3	4.3	4.2
Consumer services	6.2	6.2	5.5	5.3	4.7	4.5	4.0	4.4	5.2	5.3	5.0	4.8	4.7	4.9	4.6	4.4	4.2
Public services	2.1	2.4	2.3	1.9	2.1	2.0	1.8	2.0	2.1	2.1	2.4	2.2	2.0	2.3	3.3	2.3	2.1
Firm size - private sector: Men 15-64																	
1-19 employees	17.7	17.5	16.3	15.5	14.9	14.1	13.4	15.6	16.3	16.4	16.1	15.1	15.0	14.5	14.1	14.0	12.8
20-99 employees	13.1	12.7	11.9	11.6	10.5	10.4	10.2	12.3	12.8	12.5	11.4	10.9	11.6	10.8	10.2	10.6	9.5
100-499 employees	10.9	10.1	9.2	8.9	8.4	8.7	9.1	10.7	11.5	10.1	8.8	8.3	8.7	8.4	8.5	8.4	7.6
500 or more employees	5.0	4.1	4.0	3.9	3.6	3.3	3.3	4.1	4.6	4.4	4.1	3.8	3.9	4.2	3.9	4.1	4.0
Firm size - private sector: Women 15-64																	
1-19 employees	9.9	10.1	9.4	8.9	8.4	8.4	7.5	8.4	8.9	9.2	8.7	8.4	8.3	8.2	7.9	7.7	7.3
20-99 employees	6.9	6.7	5.8	5.7	5.0	5.0	4.9	6.0	6.5	6.3	6.1	5.6	5.6	5.6	5.6	5.5	5.1
100-499 employees	5.4	5.2	4.3	4.3	3.9	3.7	3.9	4.6	5.3	5.2	4.7	4.2	4.4	4.4	4.3	4.5	3.8
500 or more employees	2.9	2.6	2.6	2.6	2.3	2.0	1.9	2.3	2.7	2.8	2.5	2.4	2.3	2.4	2.5	2.5	2.5
Earnings of $50,000 or more																	
Men - All industries	4.5	3.2	2.1	2.6	2.1	2.4	2.7	4.0	4.1	3.3	2.5	2.1	2.1	2.7	2.6	3.0	2.7
Men - Private sector	6.1	4.4	2.9	3.4	2.8	3.2	3.6	5.2	5.5	4.5	3.4	2.8	2.7	3.5	3.2	3.8	3.3
Women -All industries	0.7	0.6	0.4	0.6	0.4	0.4	0.4	0.6	0.7	0.7	0.7	0.6	0.5	0.7	0.8	0.6	0.7
Women - Private sector	1.9	1.4	1.1	1.4	0.7	0.8	0.9	1.3	1.4	1.5	1.5	1.3	1.0	1.2	1.2	1.0	1.3

* Jobs paying at least $500 in 1989 constant dollars.

**: Total annual earnings (in 1999 constant dollars) in the year prior to the layoff.

Note: the private sector refers to all industries except public services.

Source: Longitudinal Worker File (10% version).

Table 3: Separations associated with category K (reasons not listed on ROEs), Canada, 1983-1999 (%)*

Year	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
All workers	4.7	4.8	4.9	5.0	5.1	5.1	4.9	5.1	4.9	4.8	4.8	4.8	4.8	4.6	4.4	4.3	4.5
Men	4.6	4.7	4.7	4.8	5.0	5.0	4.9	5.0	4.9	4.7	4.6	4.7	4.7	4.6	4.4	4.3	4.5
Women	4.9	5.1	5.2	5.2	5.4	5.3	4.9	5.2	5.1	5.0	4.9	5.0	4.9	4.7	4.4	4.2	4.4
Men 15-24	6.9	7.3	7.3	7.5	7.6	7.5	7.4	7.7	7.6	7.4	7.2	7.3	7.2	7.0	6.8	6.7	7.1
Men 25-34	4.7	4.6	4.7	4.7	5.0	4.8	4.8	5.2	5.1	4.9	5.0	5.1	5.0	4.9	4.6	4.7	4.9
Men 35-44	3.3	3.4	3.3	3.3	3.4	3.5	3.6	3.8	3.7	3.7	3.6	3.7	3.8	3.6	3.4	3.4	3.6
Men 45-54	2.8	2.8	2.8	2.8	3.0	3.0	3.0	3.1	3.2	3.1	3.2	3.2	3.3	3.2	3.0	2.8	2.9
Men 55-64	2.7	2.8	2.8	2.7	2.9	3.6	3.3	3.1	3.5	3.1	3.4	3.4	3.7	3.7	3.5	2.9	2.9
Women 15-24	7.0	7.4	7.5	7.5	7.5	7.3	6.9	7.3	7.3	7.3	7.1	7.2	7.0	6.7	6.2	6.1	6.3
Women 25-34	4.7	4.8	5.0	5.0	5.2	5.1	4.8	5.4	5.2	5.3	5.2	5.2	5.3	5.0	4.6	4.5	4.7
Women 35-44	3.7	3.6	3.7	3.9	4.1	4.1	3.8	4.1	4.0	4.0	3.9	4.1	4.0	3.9	3.6	3.5	3.7
Women 45-54	3.1	3.2	3.3	3.3	3.7	3.5	3.3	3.7	3.7	3.6	3.7	3.8	3.7	3.5	3.5	3.1	3.2
Women 55-64	3.2	3.2	3.3	3.2	3.6	4.0	3.7	3.6	3.4	3.5	3.9	4.1	4.1	4.4	4.5	3.0	3.4

* Jobs paying at least $500 in 1989 constant dollars.

Source: Longitudinal Worker File (10% version).

Table 4: Sum of permanent layoffs and separations associated with category K, Canada, 1983-1999 (%)*

Year	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
All workers	12.4	12.3	11.9	11.7	11.5	11.2	10.8	11.9	12.1	11.9	11.6	11.3	11.3	11.0	10.8	10.5	10.2
Men	14.3	14.1	13.6	13.4	13.1	12.9	12.6	14.0	14.4	13.9	13.5	13.1	13.2	12.8	12.5	12.4	12.0
Women	9.9	10.1	9.8	9.6	9.6	9.4	8.7	9.5	9.7	9.7	9.5	9.3	9.1	9.0	9.0	8.4	8.3
Men 15-24	18.8	18.8	17.8	17.4	16.8	16.2	15.6	17.4	17.9	17.3	16.7	16.3	16.4	16.0	15.3	15.2	14.7
Men 25-34	15.3	14.5	14.0	14.0	13.7	13.1	12.9	15.2	15.6	15.3	14.8	14.3	14.2	13.8	13.3	13.2	12.8
Men 35-44	11.7	11.4	10.9	10.8	10.8	10.6	10.6	12.0	12.5	12.3	11.9	11.6	11.8	11.4	11.3	11.3	10.9
Men 45-54	10.5	10.4	10.2	10.0	9.8	9.6	9.7	10.7	11.1	10.8	10.7	10.4	10.7	10.5	10.4	10.3	9.9
Men 55-64	9.8	10.0	10.0	9.6	9.8	10.6	10.7	11.1	12.0	11.4	11.5	11.5	12.1	11.9	11.9	11.3	11.0
Women 15-24	13.3	14.0	13.3	13.0	12.4	12.0	11.2	12.0	12.4	12.7	12.3	12.2	12.1	12.0	11.3	10.8	10.6
Women 25-34	9.7	9.7	9.6	9.6	9.6	9.3	8.7	10.1	10.2	10.4	10.1	10.0	9.9	9.7	9.6	9.1	8.9
Women 35-44	7.6	7.6	7.5	7.5	7.6	7.5	7.0	8.0	8.2	8.2	8.0	7.9	7.8	7.7	7.9	7.4	7.4
Women 45-54	7.0	6.9	6.9	6.8	7.0	6.8	6.5	7.4	7.6	7.4	7.4	7.1	6.9	6.8	7.2	6.5	6.5
Women 55-64	7.1	7.1	6.9	6.7	7.1	7.6	7.2	7.7	7.7	8.1	8.4	8.2	7.9	8.2	8.8	6.9	6.9

* Jobs paying at least $500 in 1989 constant dollars.

Source: Longitudinal Worker File (10% version).

Table 5: Logit models of permanent layoffs.

	Permanent layoff rate in 1989	Change in risk of layoff 1989-1999**			
		Model			
		#1		#2	
	%	percentage point			
Men 15-24	8.3	-1.0		-0.5	
Men 25-34	8.1	-0.3		0.0	*
Men 35-44	7.1	0.3		0.0	*
Men 45-54	6.7	0.2	*	0.4	
Men 55-64	7.4	0.6		0.4	
Women 15-24	4.3	-0.1		0.0	*
Women 25-34	4.0	0.3		0.3	
Women 35-44	3.2	0.5		0.5	
Women 45-54	3.1	0.1	*	0.5	
Women 55-64	3.5	0.0	*	0.2	*

*: coefficient for the year 1999 not statistically significant at the 5% level (two-tailed test).

** This reads as follows : "By how much has workers' probability of being permanently laid-off changed between 1989 and 1999?"

Note: For each age-gender group, marginal effects for the year 1999 are evaluated at a probability equal to the average permanent layoff rate of 1989. Model 1 includes controls for age, age squared, province and a vector of year effects. Model 2 includes additional controls for industry (6 categories) and firm size (4 categories).

Source: Author's calculations from the Longitudinal Worker File (10% version).

Table 6: Logit models of permanent layoffs and separations associated with category K

	Permanent layoffs and separations K in 1989	Change in risk of separation 1989-1999**			
		Model			
		#1		#2	
	%	percentage point			
Men 15-24	15.6	-1.3		-0.9	
Men 25-34	12.9	-0.1	*	0.1	*
Men 35-44	10.6	0.4		-0.2	*
Men 45-54	9.7	0.1	*	0.1	*
Men 55-64	10.7	0.2	*	-0.1	*
Women 15-24	11.2	-0.7		-0.5	
Women 25-34	8.7	0.2		0.3	*
Women 35-44	7.0	0.5		0.4	
Women 45-54	6.5	0.0	*	0.5	
Women 55-64	7.2	-0.3		0.0	*

*: coefficient for the year 1999 not statistically significant at the 5% level (two-tailed test).
** This reads as follows : "By how much has workers' probability of being permanently laid-off *or* of separating for reasons not listed on ROEs changed between 1989 and 1999?"

Note: For each age-gender group, marginal effects for the year 1999 are evaluated at a probability equal to the average permanent separation rate of 1989. Model 1 includes controls for age, age squared, province and a vector of year effects. Model 2 includes additional controls for industry (6 categories) and firm size (4 categories).

Source: Author's calculations from the Longitudinal Worker File (10% version).

Table 7: Logit models of permanent layoffs by industry, firm size and earnings

	Men		Women	
	(1) Permanent layoff rate in 1989	(2) Change in risk of layoff 1989-1999**	(3) Permanent layoff rate in 1989	(4) Change in risk of layoff 1989-1999**
	%	percentage point	%	percentage point.
Industry				
Primary and construction	22.2	-0.4	12.7	-1.0*
Manufacturing	6.1	-0.3	5.7	-0.3
Distributive services	4.4	0.9	3.8	0.5
Business services	5.6	0.7	3.2	1.1
Consumer services	5.0	0.3	4.0	0.1
Public services	2.3	0.8	1.8	0.7
Firm size - private sector				
1-19 employees	13.4	-1.2	7.5	-0.4
20-99 employees	10.2	-1.1	4.9	0.1*
100-499 employees	9.1	-1.7	3.9	-0.1*
500 or more employees	3.3	0.7	1.9	0.6
Highly paid workers* **				
All industries	2.7	0.1*	0.4	0.3
Private sector	3.6	0.1*	0.9	0.7

*: coefficient for the year 1999 not statistically significant at the 5% level (two-tailed test).

** This reads as follows : "By how much has workers' probability of being permanently laid-off changed between 1989 and 1999?"

***: Workers with total annual earnings of $50,000 or more (in 1999 constant dollars) in the year preceding the layoff.

Notes:

1. Industry-specific logit models and firm size-specific logit models include the following explanatory variables: age, age squared, province and year effects. These models are run separately for men and women.
2. Logit models for highly-paid workers include the following explanatory variables: age, age squared, industry, firm size, province and a vector of year effects. These models are run separately for men and women.
3. The private sector refers to all industries except public services.

Table 8: Hiring rates (%) by province, 1984-1999

Year	NFLD	PEI	NS	NB	QC	ON	MAN	SASK	ALTA	BC
1984	32.9	31.0	26.6	25.0	22.8	21.6	20.0	20.9	24.8	21.8
1985	35.8	30.3	25.3	26.6	23.6	23.7	21.4	23.1	29.8	24.6
1986	33.7	30.7	24.8	25.5	23.4	23.6	22.0	22.0	24.6	27.2
1987	35.2	30.8	25.2	28.0	24.5	25.3	21.8	20.8	27.0	26.5
1988	35.5	29.9	26.9	28.5	24.8	24.9	20.5	22.4	28.9	28.3
1989	32.6	28.2	25.3	28.0	24.7	23.4	20.7	22.0	27.7	29.7
1990	31.3	26.9	22.4	25.6	20.2	18.0	19.1	21.2	26.9	26.6
1991	30.0	24.4	18.8	21.8	17.8	14.1	15.3	19.0	21.7	23.2
1992	28.3	22.2	19.9	22.4	17.8	13.5	16.4	17.5	20.0	22.7
1993	30.1	22.0	19.6	22.7	17.9	14.5	16.0	17.7	23.0	22.1
1994	27.9	24.1	19.9	23.1	19.8	17.6	18.7	20.7	24.3	23.1
1995	25.0	27.7	20.6	23.4	18.9	16.8	17.9	19.4	22.8	21.1
1996	24.1	24.0	19.8	22.2	18.4	15.8	18.7	19.6	24.2	21.1
1997	28.8	27.7	24.0	23.8	22.3	21.1	22.0	23.8	31.5	23.8
1998	26.8	25.3	21.4	24.4	22.7	19.9	20.6	19.2	25.6	19.6
1999	25.2	25.5	22.6	26.2	23.2	21.0	19.7	19.7	24.6	20.4
1985-89	34.6	30.0	25.5	27.3	24.2	24.2	21.3	22.1	27.6	27.3
1995-99	26.0	26.1	21.7	24.0	21.1	18.9	19.8	20.4	25.7	21.2
% change	-24.9	-13.1	-15.0	-12.1	-12.7	-21.8	-7.1	-7.7	-6.7	-22.2

* Jobs paying at least $500 in 1989 constant dollars.
Source: Longitudinal Worker File (10% version).

Table 9 : Hiring rates (%) by industry and firm size, 1984-1999

Industry	(1) Primary & Construction	(2) Manufacturing	(3) Distributive services	(4) Business services	(5) Consumer services	(6) Public services
Year						
1984	35.5	21.7	17.5	23.1	30.6	12.1
1985	38.0	22.3	19.3	25.8	32.0	14.3
1986	36.7	22.8	18.2	25.9	31.7	13.4
1987	39.6	24.8	22.1	26.5	31.5	12.4
1988	37.8	24.7	21.3	26.2	32.1	14.6
1989	36.9	23.1	22.1	24.5	31.0	14.2
1990	32.6	17.7	18.1	20.4	28.3	12.7
1991	29.3	14.8	14.9	16.4	23.0	11.4
1992	28.6	16.6	15.1	15.9	22.3	9.7
1993	30.9	17.4	15.0	17.6	23.8	8.9
1994	32.9	20.0	17.6	21.6	26.4	8.8
1995	30.9	19.5	17.7	20.1	24.0	9.0
1996	31.0	17.5	16.7	21.3	23.3	9.1
1997	35.0	21.6	20.9	25.3	28.6	13.6
1998	31.0	21.1	19.2	24.9	26.5	11.6
1999	32.2	21.5	19.8	24.2	27.0	11.1
1985-89	37.8	23.5	20.6	25.8	31.7	13.8
1995-99	32.0	20.3	18.8	23.2	25.9	10.9
% change	-15.3	-13.9	-8.5	-10.2	-18.3	-20.9

Firms in the private sector

Firm size	1-19 employees	20-99 employees	100-499 employees	500+ employees
Year				
1984	31.6	32.2	28.0	16.3
1985	34.7	32.7	29.3	17.9
1986	33.1	33.2	29.7	17.5
1987	33.4	34.1	30.7	21.0
1988	33.0	33.8	31.3	20.9
1989	32.3	32.7	29.8	20.3
1990	28.6	26.6	24.8	16.4
1991	25.3	22.3	20.3	12.6
1992	24.6	24.4	19.3	12.3
1993	26.4	23.8	23.3	12.8
1994	26.6	26.6	28.5	17.0
1995	24.6	24.9	24.9	17.4
1996	23.6	28.3	20.9	15.9
1997	29.0	30.6	27.3	20.4
1998	25.0	28.2	27.8	20.1
1999	26.0	28.7	27.1	20.4
1985-89	33.3	33.3	30.2	19.5
1995-99	25.6	28.1	25.6	18.8
% change	-23.0	-15.6	-15.2	-3.6

* Jobs paying at least $500 in 1989 constant dollars.
Source : Longitudinal Worker File (10% version).

Table 10: Hiring rates (%) by age and sex, 1984-1999 - workers aged 25 to 54

	Men			Women		
	25-34	35-44	45-54	25-34	35-44	45-54
Year						
84	24.7	19.7	14.4	22.7	19.2	14.3
85	26.1	20.2	15.6	24.3	20.7	15.6
86	25.6	19.1	15.1	24.7	20.3	16.9
87	27.1	20.4	16.9	25.0	21.0	18.4
88	24.9	17.6	13.8	23.4	18.8	13.4
89	26.0	20.3	17.8	24.8	21.8	20.2
90	23.6	21.1	18.8	22.8	20.7	22.1
91	19.0	16.1	16.0	17.0	14.2	15.8
92	19.2	16.2	16.8	15.6	13.4	15.7
93	20.3	17.1	16.4	16.0	13.1	14.5
94	22.2	18.6	17.4	18.0	14.4	14.9
95	20.8	18.1	16.7	17.6	14.2	14.4
96	20.6	18.1	16.4	16.9	13.9	13.5
97	23.5	20.4	18.7	21.4	17.7	16.8
98	21.8	19.0	17.4	19.9	16.7	15.9
99	22.4	18.7	17.6	19.8	16.4	16.3
1985-89	26.0	19.5	15.9	24.4	20.5	16.9
1995-99	21.8	18.9	17.4	19.1	15.8	15.4
% change	-15.9	-3.3	9.5	-21.7	-23.0	-9.0

* Jobs paying at least $500 in 1989 constant dollars.
Source: Longitudinal Worker File (10% version).

Table 11: Permanent quit rates (%) in Canada, by various characteristics, 1983-1999*

Year	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99
All workers	5.4	6.1	7.0	7.5	8.7	9.4	9.2	7.9	5.8	5.0	4.8	5.5	5.4	5.3	6.2	6.9	7.3
Men	4.8	5.5	6.5	7.1	8.3	9.0	8.9	7.4	5.4	4.7	4.6	5.5	5.3	5.3	6.3	6.8	7.2
Women	6.3	6.9	7.8	8.3	9.3	10.0	9.6	8.5	6.4	5.5	5.1	5.6	5.5	5.3	6.2	6.9	7.4
Men 15-24	7.5	8.8	10.4	11.6	13.3	14.2	13.9	12.3	9.3	8.2	8.1	9.5	9.1	9.0	10.4	11.4	12.3
Men 25-34	5.4	6.3	7.4	7.9	9.4	9.8	9.8	8.5	6.4	5.7	5.7	6.9	6.7	7.0	8.2	8.9	9.3
Men 35-44	3.5	3.9	4.5	4.8	5.6	5.9	5.9	5.1	3.7	3.2	3.3	3.9	3.9	4.0	4.8	5.2	5.5
Men 45-54	2.3	2.4	2.9	3.0	3.7	3.8	3.8	3.2	2.4	2.1	2.0	2.3	2.4	2.4	2.8	3.0	3.3
Men 55-64	1.4	1.6	1.8	2.1	2.4	2.7	2.7	2.3	1.6	1.4	1.3	1.5	1.6	1.7	2.1	2.1	2.2
Women 15-24	9.1	10.4	11.8	12.7	14.2	14.9	14.6	13.7	10.9	9.6	9.3	10.0	10.2	9.5	10.6	12.0	12.8
Women 25-34	6.6	7.1	8.2	8.6	9.9	10.0	9.8	9.2	7.1	6.1	5.8	6.4	6.5	6.5	7.7	8.5	9.0
Women 35-44	4.5	4.8	5.3	5.6	6.5	7.0	6.6	6.0	4.5	3.9	3.5	3.9	3.8	3.8	4.5	5.0	5.5
Women 45-54	3.2	3.5	4.0	4.1	4.8	4.9	4.7	4.4	3.3	2.8	2.5	2.6	2.5	2.5	3.0	3.3	3.5
Women 55-64	2.7	2.8	3.1	3.2	3.6	3.8	3.7	3.2	2.6	2.3	1.9	1.9	1.8	1.9	2.2	2.4	2.4
By province																	
Newfoundland	2.8	2.7	2.9	3.1	3.9	4.4	4.4	3.8	2.7	2.4	2.0	2.2	2.2	2.3	2.6	2.9	3.3
Prince-Edward Island	3.1	3.2	3.3	3.4	3.8	4.4	4.4	3.9	2.9	2.4	2.2	2.2	2.6	2.8	3.4	3.3	4.5
Nova Scotia	3.9	4.4	4.9	4.9	5.8	6.5	6.3	5.6	4.0	3.5	3.3	3.4	3.6	3.7	3.9	4.9	5.7
New Brunswick	3.5	3.5	4.0	4.5	5.2	5.9	5.6	5.2	4.0	3.5	3.1	3.2	3.6	3.5	4.1	5.0	5.7
Quebec	4.1	5.1	5.7	5.9	7.5	8.2	7.7	6.5	4.9	4.4	4.0	4.8	4.7	4.5	5.3	6.2	6.8
Ontario	5.6	6.8	7.9	8.8	10.2	10.8	10.4	8.1	5.6	4.6	4.4	5.2	5.2	5.0	5.8	6.6	7.3
Manitoba	5.7	6.2	7.0	7.9	8.1	8.5	8.1	7.5	5.7	5.3	4.9	5.6	5.9	5.9	7.0	7.8	7.8
Saskatchewan	6.9	6.8	7.6	7.1	7.9	8.3	8.1	7.7	6.3	5.3	5.1	6.2	6.1	6.7	7.7	7.6	7.2
Alberta	8.2	8.4	10.0	9.7	10.4	11.6	11.4	11.2	8.9	7.3	7.5	8.5	8.0	8.5	10.5	10.5	10.2
British Columbia	5.4	5.2	5.9	6.8	7.5	8.4	9.2	9.1	7.3	6.6	6.3	6.5	6.3	6.1	6.4	6.6	6.7
By industry																	
Primary & construction	5.0	5.1	6.1	6.5	7.7	8.2	7.9	6.3	4.2	3.5	3.5	4.2	3.9	4.0	5.2	5.1	5.4
Manufacturing	4.9	5.9	7.0	7.9	9.5	10.5	10.0	7.7	5.1	4.4	4.2	5.3	5.2	4.8	5.9	6.6	7.3
Distributive services	4.2	5.1	5.9	6.5	7.5	8.5	8.4	7.0	5.0	4.3	4.3	5.0	5.0	5.2	6.4	7.1	7.4
Business services	6.8	7.5	8.4	8.7	9.8	10.4	10.1	8.7	6.6	5.8	5.4	6.0	5.8	6.0	6.8	7.2	7.6
Consumer services	8.7	9.7	10.9	11.9	13.2	14.0	13.9	12.6	10.1	8.9	8.5	9.4	9.3	9.0	10.0	11.2	11.8
Public services	2.5	2.7	3.1	2.8	3.5	3.6	3.5	3.3	2.4	2.0	1.8	1.8	1.8	1.9	2.2	2.3	2.4
By firm size																	
1-19 employees	6.0	6.7	7.5	7.9	8.8	9.2	8.7	7.7	5.8	5.1	4.8	5.5	5.4	5.3	5.9	6.4	6.7
20-99 employees	7.7	8.8	10.0	10.7	12.2	13.1	12.8	11.0	8.3	7.3	7.0	7.9	7.8	7.5	8.7	9.5	10.1
100-499 employees	6.6	7.5	9.0	9.6	11.1	11.9	11.7	10.1	7.4	6.4	6.0	6.8	6.7	6.5	7.7	8.5	9.1
500 or more employees	3.7	4.2	4.9	5.3	6.3	6.9	6.9	5.8	4.3	3.6	3.4	3.9	3.9	3.9	4.8	5.3	5.6
By earnings**																	
Less than $20,000	7.3	8.3	9.5	10.3	11.6	12.4	12.0	10.7	8.3	7.3	6.9	7.8	7.6	7.4	8.4	9.2	9.9
$20,000 - $50,000	3.9	4.3	5.0	5.3	6.3	7.0	7.0	5.8	4.0	3.3	3.1	3.6	3.6	3.7	4.5	4.9	5.2
$50,000 or more	2.2	2.2	2.4	2.6	3.0	3.4	3.5	3.0	2.2	1.7	1.7	1.9	2.0	2.3	2.7	2.9	3.0

* Jobs paying at least $500 in 1989 constant dollars.

**: Total annual earnings (in 1999 constant dollars) in the year prior to the layoff.

Source: Longitudinal Worker File (10% version).

Table 12: Logit models of permanent quits

	Permanent quit rate in 1989	Change in risk of quitting 1989-1999**	
		Model	
		#1	#2
	%	percentage point	
Men 15-24	13.9	-1.9	-2.5
Men 25-34	9.8	-0.4	-0.9
Men 35-44	5.9	-0.5	-0.9
Men 45-54	3.8	-0.5	-0.7
Men 55-64	2.7	-0.6	-0.7
Women 15-24	14.6	-2.2	-2.9
Women 25-34	9.8	-0.7	-1.0
Women 35-44	6.6	-1.1	-1.4
Women 45-54	4.7	-1.2	-1.0
Women 55-64	3.7	-1.3	-1.2

** This reads as follows : "By how much has workers' probability of permanently quitting changed between 1989 and 1999?"

Note: For each age-gender group, marginal effects for the year 1999 are evaluated at a probability equal to the average permanent quit rate of 1989. Model 1 includes controls for age, age squared, province and a vector of year effects. Model 2 includes additional controls for industry (6 categories) and firm size (4 categories). For all age-gender groups, the coefficient for the year 1999 is statistically significant at the 0.01% level (two-tailed test).

Source: Author's calculations from the Longitudinal Worker File (10% version).

Table 13: Average number of months of seniority, Canada, 1989 and 1999

	All employees		Employees who are not full-time students	
	1989	1999	1989	1999
Men 15-24	17.4	17.5	19.6	18.8
Men 25-34	53.0	49.4	53.3	49.8
Men 35-44	113.7	102.8	113.8	103.0
Men 45-54	169.3	168.4	169.5	168.4
Men 55-64	188.2	175.3	188.2	175.3
Women 15-24	16.1	16.0	18.3	17.6
Women 25-34	49.2	48.2	49.6	48.7
Women 35-44	84.1	93.8	84.2	94.1
Women 45-54	107.8	135.6	108.0	135.6
Women 55-64	143.1	149.0	143.1	149.0

Source: Labour Force Survey (September files).

Table 14 : Contribution of quits to the increase in job stability, 1989-1999

	(1)	(2)	(3)
	Layoffs	**Quits**	**Other separations**
	P1	**P2**	**P3**
a) Permanent separation rates (%) in 1989 :	5.9	9.2	7.2
b) Average complete job duration in 1989 based on a) = 47.6 months*			
c) Probability of a permanent separation (%) in 1999** : (controlling for age, gender, province, industry, firm size and a full set of gender interaction terms)	6.1	7.8	6.4
d) Average complete job duration in 1999 based on c) : = 52.9 months*			
e) Average complete job duration based on the following vector of separation rates : = 51.2 months*	5.9	7.8	7.2

* Assuming an exponential survivor function, average complete job duration equals [1 / - ln (R)]*12, where R =1-P1-P2-P3.

** Marginal effects for the year 1999 for layoffs (quits, other separations) are evaluated at a probability equal to the average permanent layoff rate (permanent quit rate, rate of other permanent separations) of 1989. See equation (1) in main text.

Table 15 : Temporary layoff rates by age and sex, 1989 and 1999

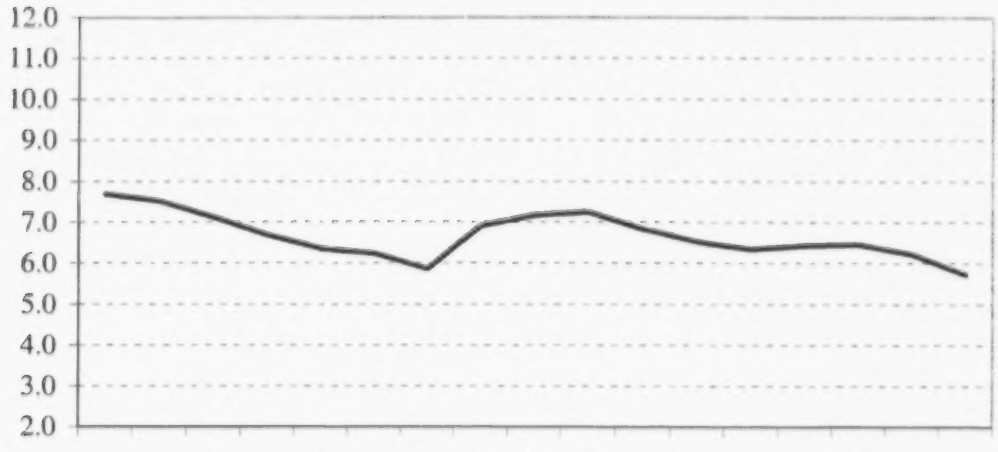
	1989	1999
	%	
All employees	7.3	7.8
Men 15-24	7.9	7.2
Men 25-34	9.7	9.2
Men 35-44	8.6	9.6
Men 45-54	9.1	9.7
Men 55-64	9.8	11.9
Women 15-24	3.7	4.0
Women 25-34	6.0	5.9
Women 35-44	6.8	7.4
Women 45-54	7.6	7.9
Women 55-64	7.4	8.8

* Jobs paying at least $500 in 1989 constant dollars.
Source : Longitudinal Worker File (10% version).

Figure 1: Incidence of self-employment (%) and unemployment rate of men aged 25-54 (U2554), Canada, 1976-2002

Source: Labour Force Survey

Figure 2: Permanent layoff rates (%), Canada, 1983-1999: Jobs paying at least $500 (1989 constant dollars)



Source: Longitudinal Worker File (1% version).

Figure 3: Permanent layoff rates (%), Canada, 1983-1999: Various T4 earnings cutoffs

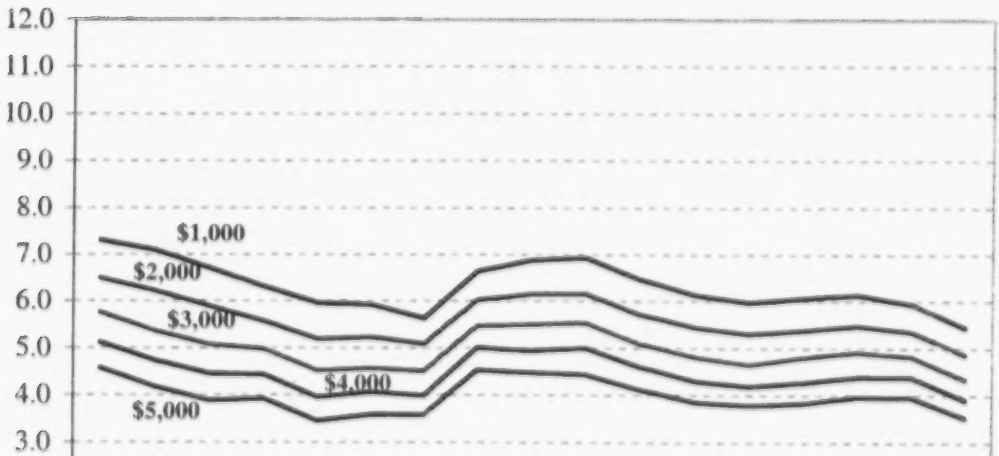
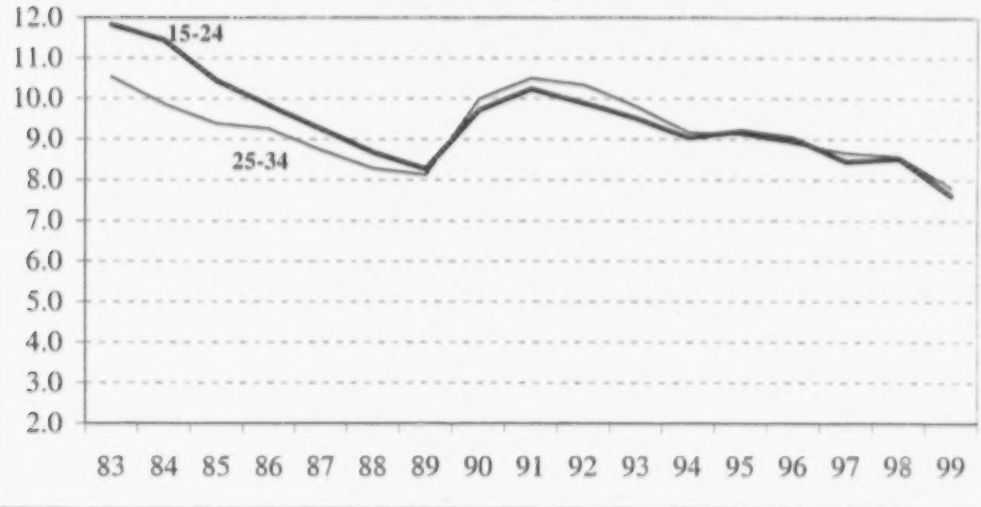
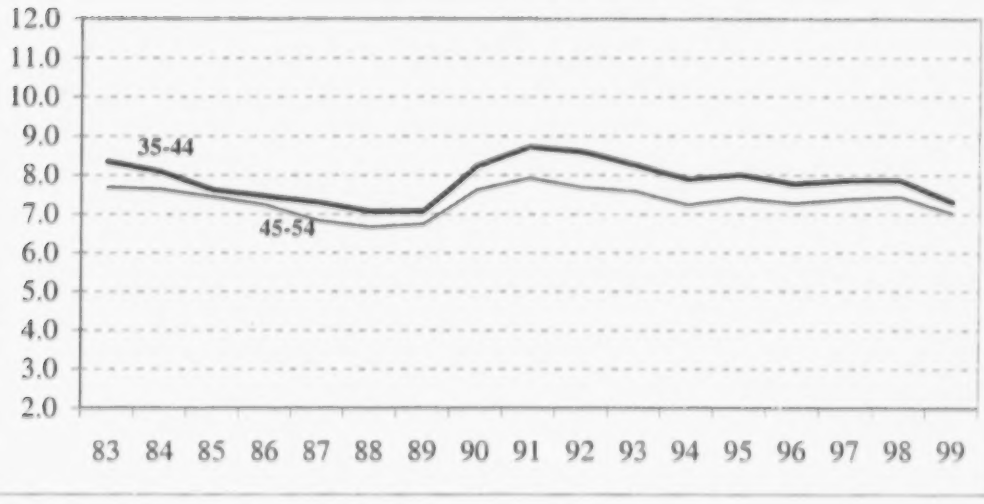


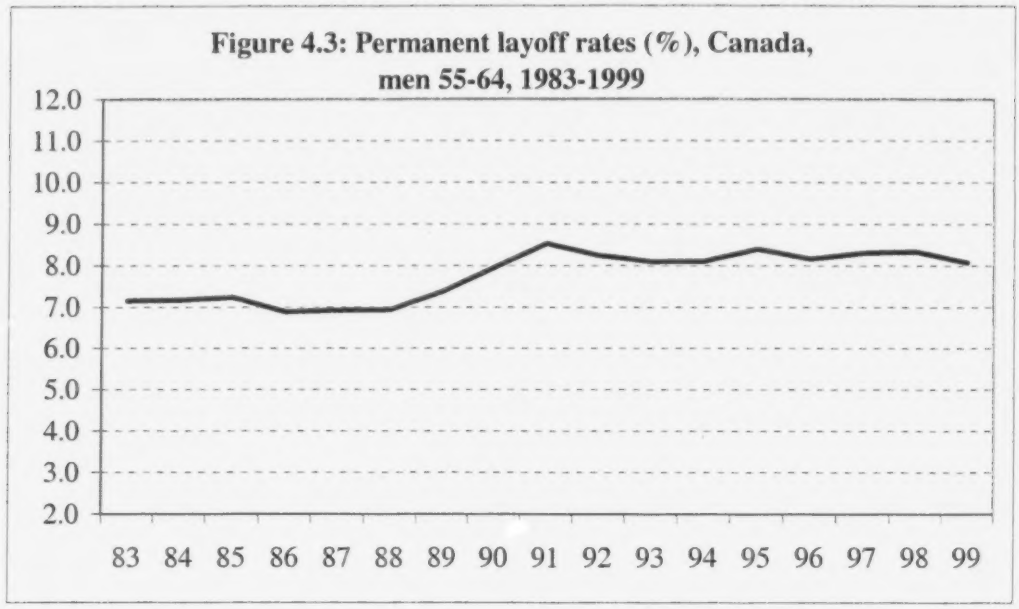
Figure 4.1: Permanent layoff rates (%), Canada, men 15-24 and 25-34, 1983-1999



Source: Longitudinal Worker File (10% version).

Figure 4.2: Permanent layoff rates (%), Canada, men 35-44 and 45-54, 1983-1999





Source: Longitudinal Worker File (10% version).

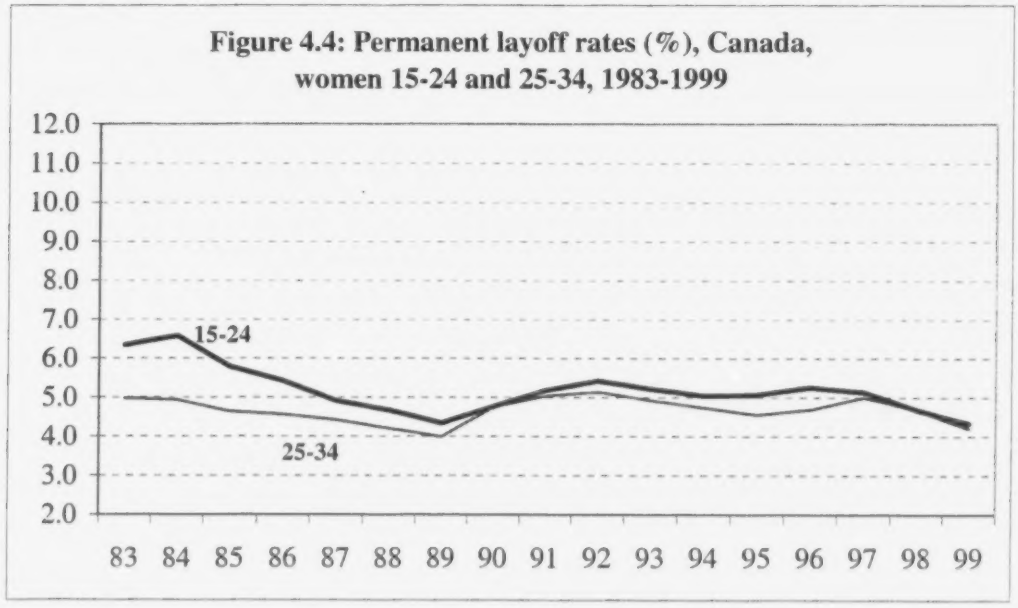
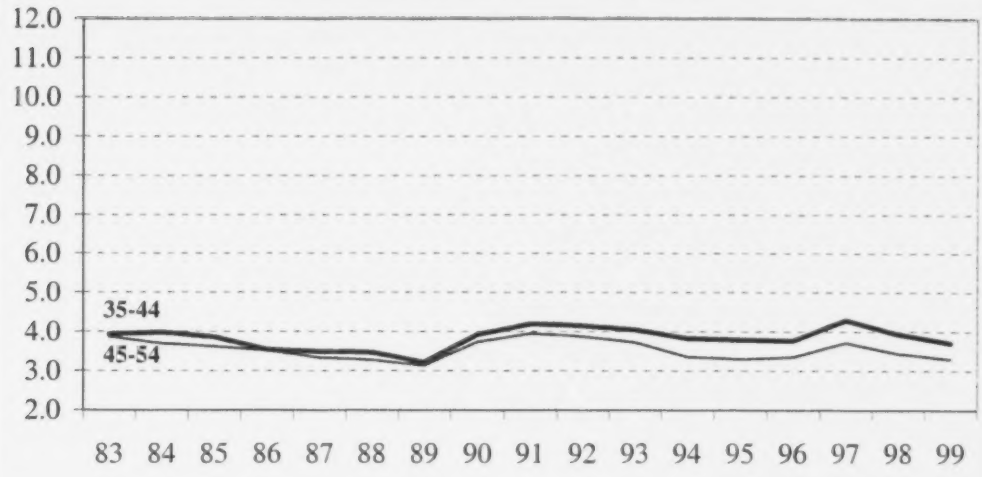


Figure 4.5: Permanent layoff rates (%), Canada, women 35-44 and 45-54, 1983-1999



Source: Longitudinal Worker File (10% version).

Figure 4.6: Permanent layoff rates (%), Canada, women aged 55-64, 1983-1999

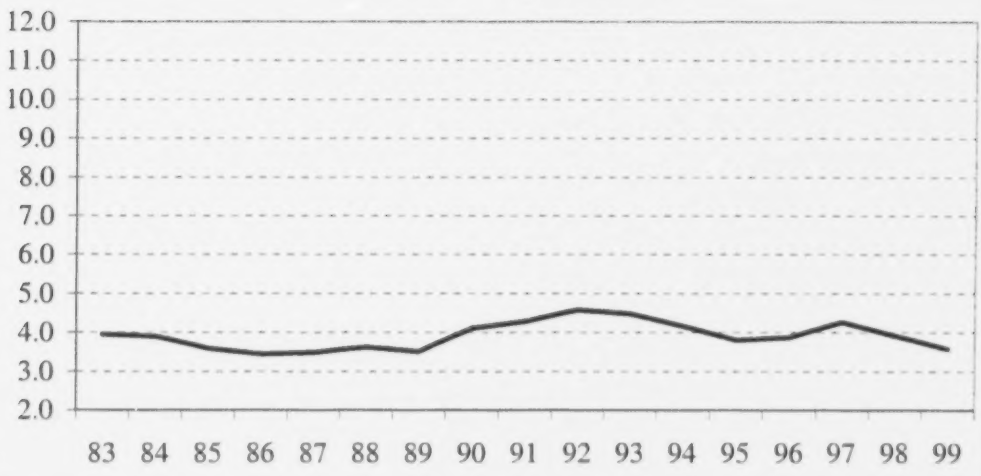
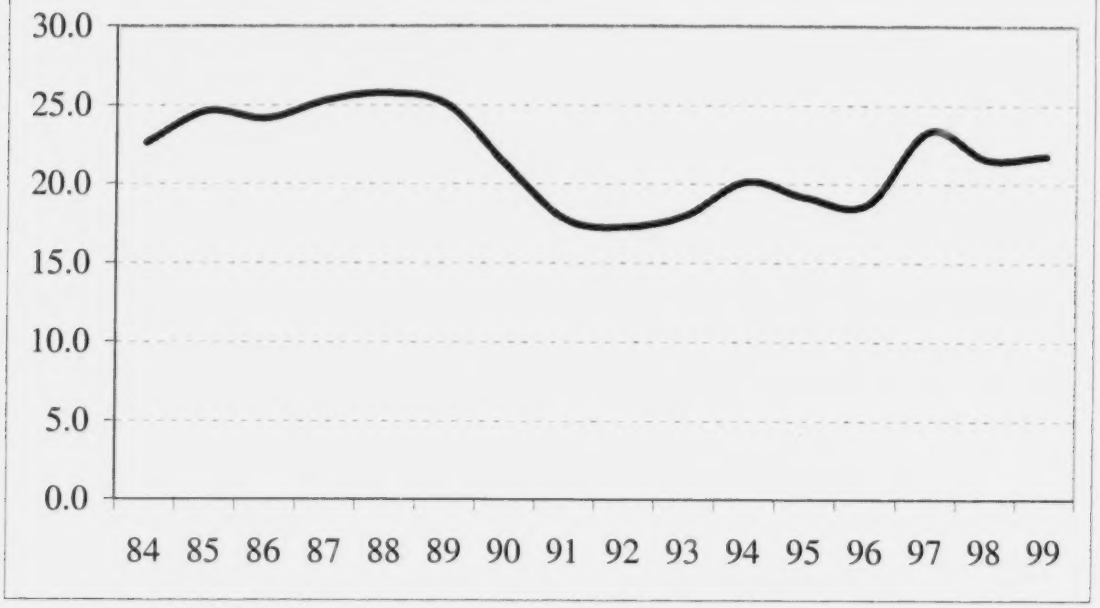


Figure 5.1 : Hiring rates (%), Canada, 1984-1999



Source : Longitudinal Worker File (10% version).

Figure 5.2 : Hiring rates (%), Canada, 1984-1999: Firms with less than 100 employees

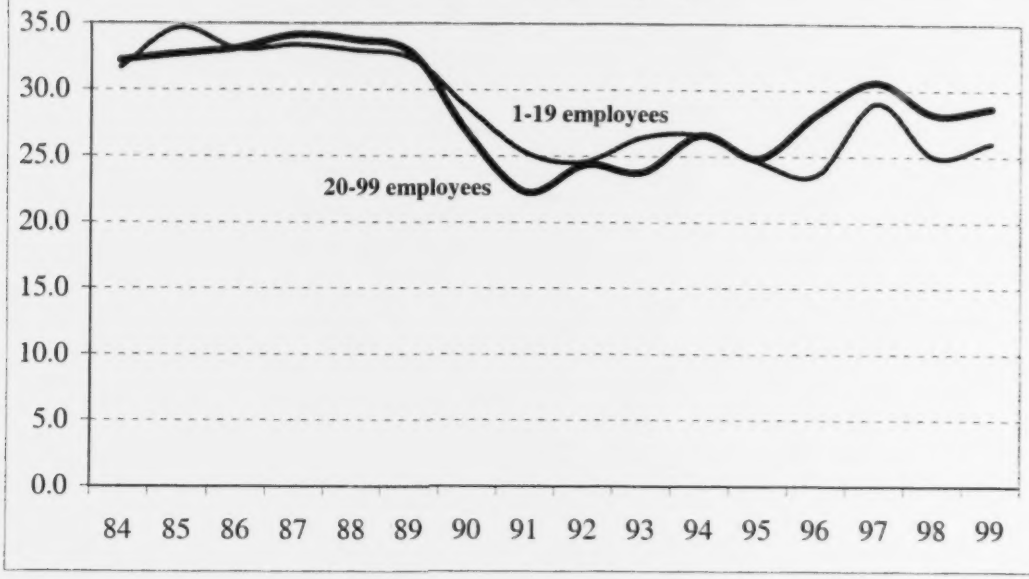
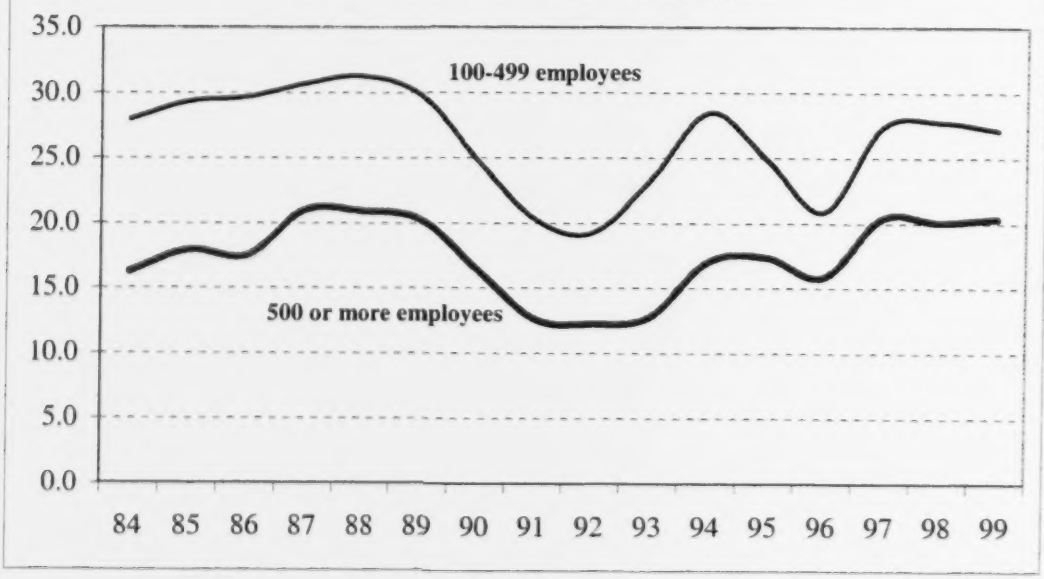


Figure 5.3 : Hiring rates (%), Canada, 1984-1999 : Firms with 100 or more employees



Source : Longitudinal Worker File (10% version).

Figure 5.4 : Hiring rates (%), Canada, 1984-1999 : Men aged 25-34 vs men aged 45-54

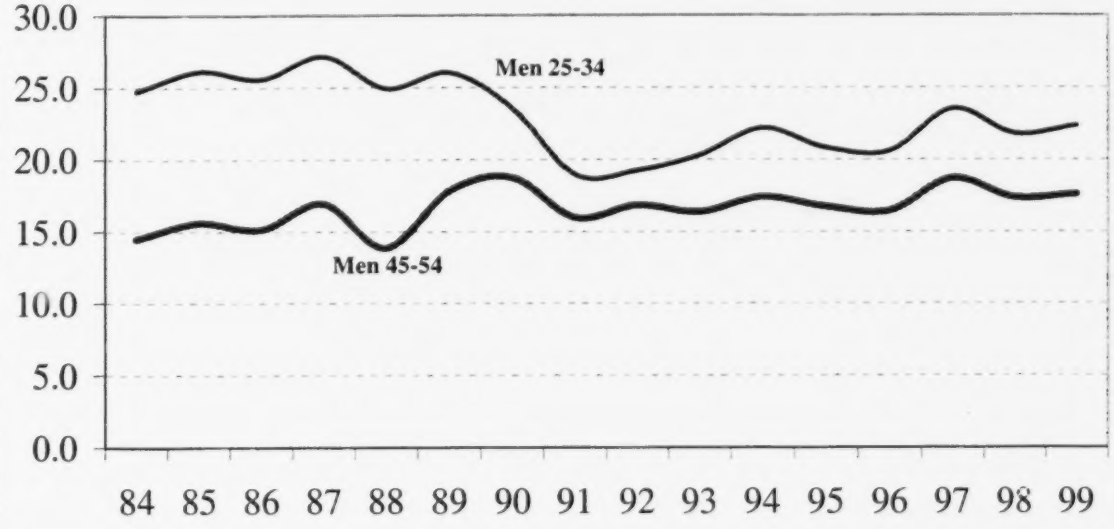
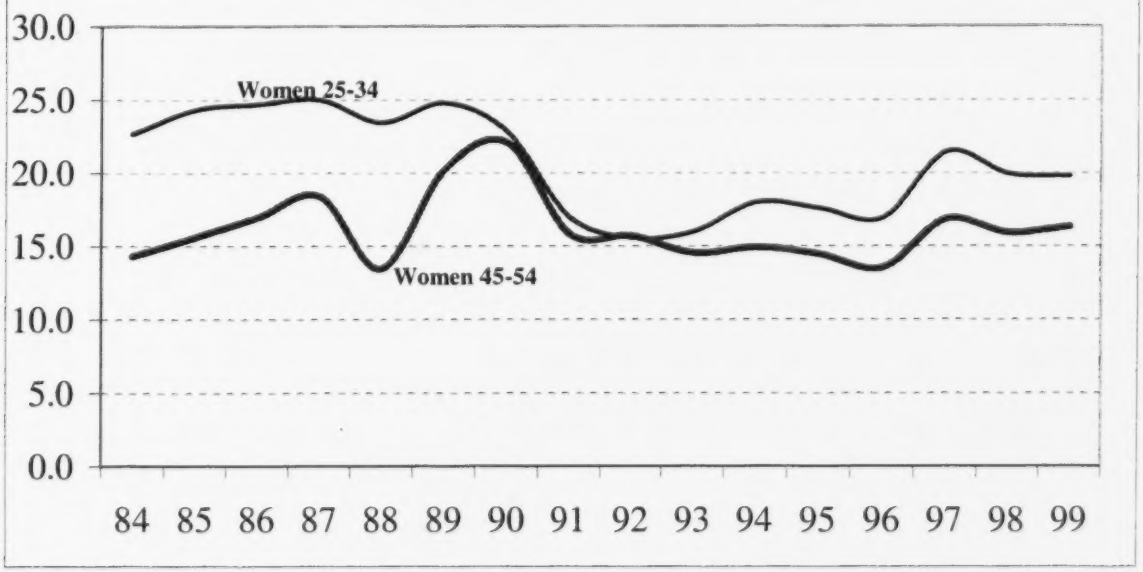


Figure 5.5 : Hiring rates (%), Canada, 1984-1999 : Women aged 25-34 vs women aged 45-54



Source : Longitudinal Worker File (10% version).

Figure 6: Permanent quit rates (%), Canada, 1983-1999

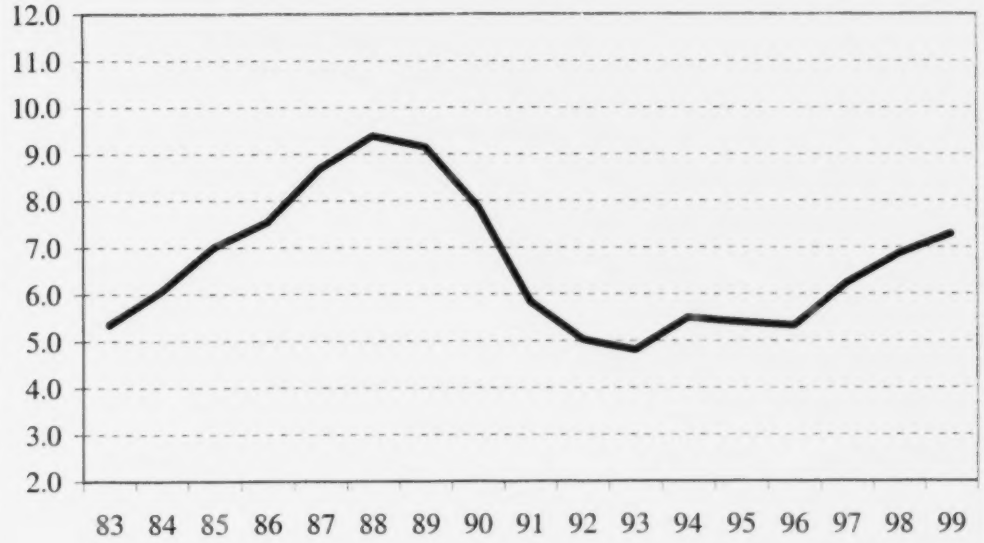
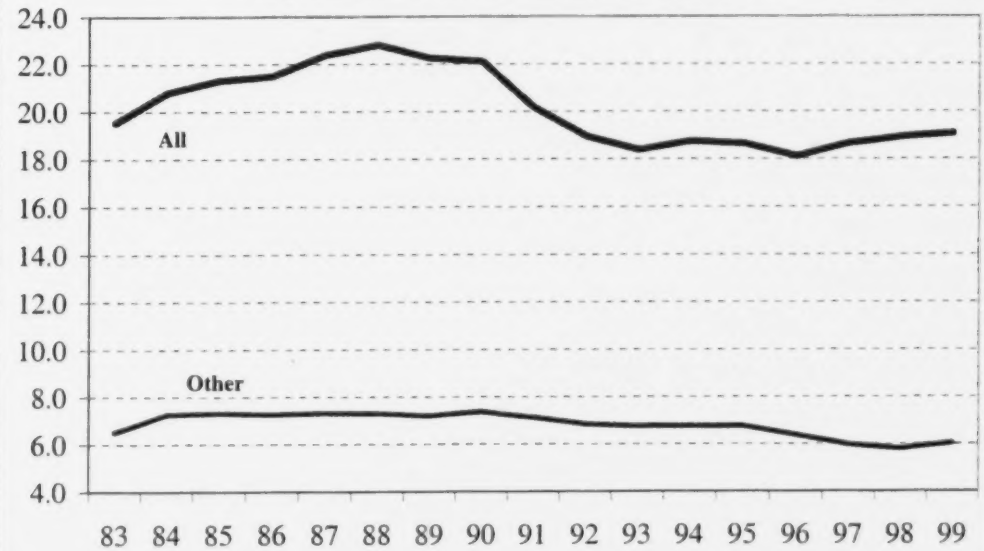
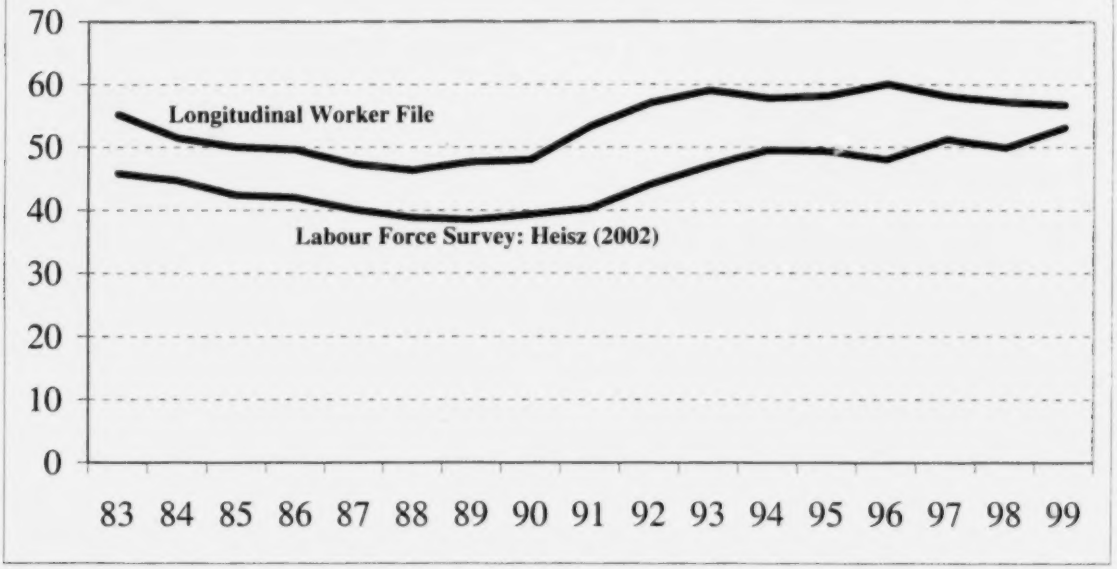


Figure 7: Other permanent separations and all permanent separations (%), Canada, 1983-1999



Source: Longitudinal Worker File (10% version).

Figure 8: Average complete job duration (months), Canada, 1983-1999: Various sources



Source: Longitudinal Worker File and Labour Force Survey.

Appendix 1: Data

The T4 files are used to calculate the number of jobs held in a given year while the ROE file is used to calculate the number of separations. Separation rates are obtained by merging ROE records with T4 records and dividing the number of separations by the number of jobs held in a given year. Therefore, in order to build a consistent time series of permanent layoff rates, both the set of jobs for which employers issue a T4 supplementary form and the set of jobs for which employers are required to issue a ROE must be fairly constant over time.

As will be shown below, the set of jobs for which employers are required to issue T4 slips has changed slightly during the 1983-1999 period. Moreover, changes to UI/EI have modified the set of jobs for which employers are required to issue ROEs

I. T4 supplementary forms

Employers have to complete T4 slips for all individuals who receive remuneration during the year if:

a) income tax, contributions to Canada's or Quebec's pension plan or to the unemployment insurance system have to be deducted from an employee's pay
or if:
b) the annual wage of an employee exceeds a certain threshold.

Between 1983 and 1988, that threshold amounted to $250. In 1989, it rose to $500 and has remained constant during the 1989-1999 period. Income tax has to be deducted whenever an employee's annual **income** (i.e. annual wages plus interests, dividends, etc) exceeds his/her personal exemption. In most cases, the underlying annual wages should be higher than the thresholds of either $250 or $500. Contributions to Canada's pension plan have to be deducted whenever the annual wage of an employee exceeds the Year's Basic Exemption (YBE). The YBE amounts roughly to 10% of the average industrial annual wage and thus exceeds the thresholds of $250 and $500. Contributions to UI have to be deducted from an employee's pay whenever he/she works in insurable employment.

Since the thresholds associated with income tax (i.e. the personal exemption) or with CPP contributions (i.e. the YBE) exceed $250 or $500, condition b, as mentioned above, should cover most jobs. However, in the cases where individuals earn more than the UI/EI threshold on a weekly basis (or work more hours per week than the minimum number required) yet earn less than either $250 or $500 on an annual basis, condition b will not include such jobs. We expect such cases to be of very limited importance.

Thus, the annual wage threshold from which employers have to issue a T4 supplementary form has not remained unchanged *in constant dollars* during the 1983-1999 period.

II. Changes to UI/EI and ROEs

By law, employers must issue a ROE to every employee working in insurable employment who has an interruption in earnings. Between 1981 and 1986, jobs involving at least 15 hours per week *and* paying at least 20% of maximum weekly insurable earnings represented insurable employment for the Unemployment Insurance system.

Between 1987 and 1996, new rules changed slightly the set of jobs that represented insurable employment: insurable jobs were then defined as those involving at least 15 hours per week *or* paying at least 20% of maximum weekly insurable earnings.

In both periods, insurable employment was job-specific. This implied that an employee who held two jobs, none of which separately met these requirements but well above the earnings threshold if taken together, was not covered by the system. Had this person separated from these two jobs, his/her employers would not have been required to issue a ROE.

Effective January 1, 1997, the minimum weekly hours/earnings coverage requirement was abolished and every hour of work became insured.[22] As a result, employers are now required to issue ROEs even for low-paid/low-hours jobs that would not have met the minimum weekly hours/earnings coverage requirement in the past.

Friesen and Maki (2000) and Sweetman (2000) have found evidence that the changes implemented in 1997 have altered the distribution of weekly hours of work. More precisely, both find that the proportion of jobs entailing fewer than 15 hours per week fell following the transition from UI to EI.

III. Constructing a time series of permanent layoff rates

Ideally, we would like to construct a time series of permanent layoff rates for the 1983-1999 period by restricting our attention to jobs that satisfy a common denominator. A consistent set of jobs would satisfy all three of the following conditions: a) they would involve at least 15 hours per week, b) pay at least 20% of the maximum value—defined in real terms and over the whole period—of weekly insurable earnings *and* c) provide an annual wage greater than a fixed threshold measured in constant dollars. Since LWF contains information neither on weekly hours nor on weekly earnings, this strategy cannot be pursued.

Our empirical strategy is the following. We calculate permanent layoff rates based on a set of jobs that provide **annual wages of at least $500 in 1989 constant dollars**. To ensure the robustness of our results, we also calculate permanent layoff rates associated with jobs that pay annual wages of at least: a) $1,000, b) $2,000, c) $3,000, d) $4,000 and e) $5,000 in 1989 constant dollars. As Figure 3 shows, permanent layoff rates display, in the aggregate, the same trends (or absence thereof) whatever definition is used.

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[22] Maximum weekly insurable earnings fell from $815 in 1996 to $750 in 1997. They have remained unchanged since then.

IV. Accounting for unsuccessful matches between ROE records and T4 records/LEAP

Since employers are required to issue T4 slips whenever an employee is in insurable employment and since employers are required to issue ROEs for all employees in insurable employment who separate from a firm, all ROE records should, in principle, be linked successfully to T4 records and LEAP using *both* workers' social insurance number and firms' identifier. Table A1-1 (based on the 1% version of LWF) shows this is not the case. Between 1983 and 1999, the proportion ROEs with layoffs that were successfully linked to T4 records and LEAP varied between 91% and 97%.[23] The match rates for 1989 and 1999 (two years with similar unemployment rates) are very similar.

To account for unsuccessful matches, we inflate the number of ROEs successfully matched to T4 records/LEAP by a factor equal to the reciprocal of the percentage of successful matches. Simply, if the ROE file indicates 100 layoffs in a given year and if 95% of these layoffs are successfully matched to T4 records/LEAP, we multiply the number of successful matches, i.e. 95, by a factor equal to 1/0.95. This allows us to base our calculations on the proper number of separations, i.e. 100 layoffs in this example. This procedure is applied for each combination of year-province-reason for separation (where reasons for separation are divided into 3 categories: a) layoffs, b) quits and, c) other separations), thereby allowing for the fact that match rates do vary over time, across provinces and across types of separations.

Table A1-2 (based on the 1% version of the LWF) shows the match rates observed in 1989 and 1999 for various provinces and various types of separations. For both years, at least 93% of layoffs were successfully matched to T4 records/LEAP in all provinces except Newfoundland, Prince-Edward-Island and Nova Scotia. In 1989, the match rates for other separations were generally smaller than for layoffs or quits in the Atlantic provinces. For instance, only 45% of other separations were successfully matched to T4 records/LEAP in Newfoundland that year, a proportion twice as small as those observed for quits and layoffs in that province.

Table A1-1: Match rates between ROEs with layoffs and T4 records, Canada, 1983-1999

Year		Year	
1983	0.911	1991	0.963
1984	0.943	1992	0.965
1985	0.946	1993	0.968
1986	0.945	1994	0.968
1987	0.938	1995	0.966
1988	0.950	1996	0.946
1989	0.955	1997	0.933
1990	0.957	1998	0.925
		1999	0.943

Source: Special tabulations from Business and Labour Market Analysis Division.

[23] Unsuccessful matches may occur due to invalid SINs and/or incorrect firm identifiers being reported on ROEs.

Table A1-2: Match rates between ROEs and T4 records in 1989 and 1999, by province and reason for separation

Province	Type of separation	1989	1999
Newfoundland	layoff	0.938	0.804
	quit	0.917	0.954
	other	0.450	0.938
Prince-Edward-Island	layoff	0.969	0.867
	quit	0.947	0.944
	other	0.688	0.920
Nova Scotia	layoff	0.964	0.901
	quit	0.941	0.955
	other	0.719	0.932
New Brunswick	layoff	0.976	0.935
	quit	0.961	0.946
	other	0.850	0.949
Quebec	layoff	0.949	0.961
	quit	0.932	0.952
	other	0.933	0.955
Ontario	layoff	0.959	0.959
	quit	0.940	0.950
	other	0.951	0.951
Manitoba	layoff	0.958	0.937
	quit	0.944	0.957
	other	0.919	0.954
Saskatchewan	layoff	0.963	0.958
	quit	0.950	0.955
	other	0.946	0.952
Alberta	layoff	0.961	0.959
	quit	0.949	0.951
	other	0.945	0.957
British Columbia	layoff	0.951	0.939
	quit	0.939	0.945
	other	0.859	0.945
Northwest Territories	layoff	0.916	0.765
	quit	0.939	0.861
	other	0.924	0.810
Yukon	layoff	0.936	0.948
	quit	0.932	0.923
	other	0.931	0.942

Source: Special tabulations from Business and Labour Market Analysis Division.

Once we impose a restriction on the annual wages associated with a job (e.g. require that all jobs pay at least $500 in 1989 constant dollars), the question arises as to whether ROEs that are unmatched belong: a) only to the universe of jobs excluded (jobs paying less than $500), b) only to the universe of jobs included (those paying at least $500), or c) to both.

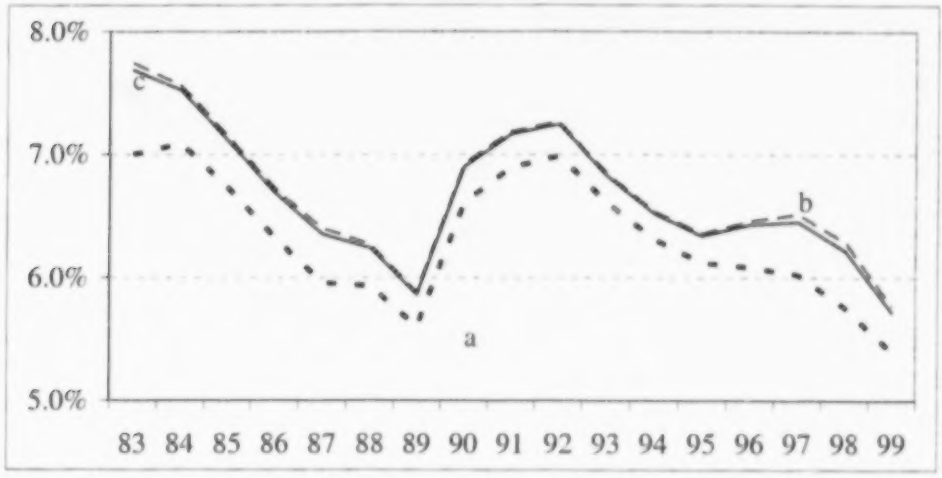
In scenario a, there is no need to inflate the number of ROEs successfully matched by an adjustment factor since these ROEs are assumed to represent all relevant ROEs. In the two other scenarios, an adjustment factor must be used to account for unsuccessful matches.

Arguably, scenario c, which assumes that some unmatched ROEs belong to the set of jobs excluded while some others belong to the set of jobs included, is the most plausible. In fact, it seems reasonable to assume that ROEs unmatched belong to the universes of jobs included and excluded in the same proportion as the ROEs successfully matched. For instance, if the number of ROEs successfully matched drops by 10% when we impose a restriction on annual wages, we might assume that the number of ROEs unmatched that are relevant for adjustment purposes is 10% lower (when we impose a restriction on annual wages) than the number of ROEs unmatched before imposing any restriction.

Chart A1-1 (based on the 1% version of LWF) shows the permanent layoff rates that result from the three aforementioned scenarios. Although they differ somewhat in terms of levels (scenario a yielding the lowest values), permanent layoff rates display essentially the same trends in all three cases. Therefore, all numbers presented in this study will be based on scenario c, i.e. on the assumption that ROEs unmatched belong to the universes of jobs included and excluded in the same proportion as the ROEs successfully matched.[24]

[24] This amounts to using the adjustment factors derived *before imposing restrictions on annual wages*.

CHART A1- 1: Permanent layoff rates (%) under various scenarios*, 1983-1999



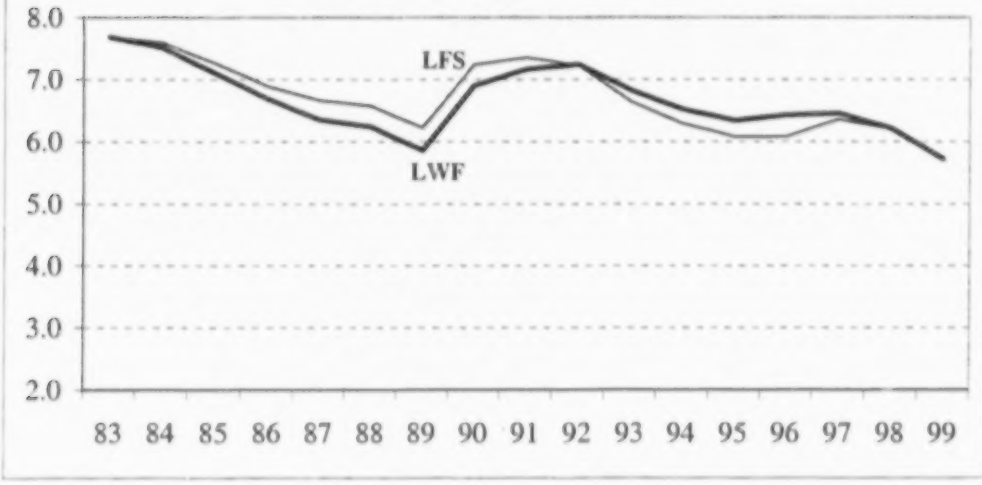
*** Jobs with annual wages of at least $500 in 1989 constant dollars.**
Source: Longitudinal Worker File (1% version).

V. Using hours-weighted employment to calculate permanent layoff rates

Ideally, one should calculate permanent layoff rates using a denominator that reflects all hours worked in a given year. The reason is that the implicit question underlying the calculation of permanent layoff rates is the following: for each hour of labour provided by Canadian workers, how many separations (layoffs) occurred?

Chart A1-2 (based on the 1% version of LWF) shows that permanent layoff rates display essentially the same trends whether we use as a denominator the number of person-jobs observed in a given year (from the LWF) or an hours-weighted measure of employment (taken from the Labour Force Survey and used by the Productivity Section, in Statistics Canada).[25] In fact, using an hours-weighted measure of employment strengthens, if anything, our conclusion regarding the absence of upward trend in permanent layoff rates between 1989 and 1999. Therefore, the permanent layoff rates presented in this study will use as a denominator the number of person-jobs observed in a given year (from the LWF).

Chart A1-2: Permanent layoff rates*: Using the number of person-jobs (LWF) or an hours-weighted measure of employment (LFS), 1983-1999



* Jobs with annual wages of at least $500 in 1989 constant dollars.
Source: Longitudinal Worker File (1% version) and Labour Force Survey.

[25] The hours-weighted measure of employment has been rescaled so as to yield, for 1983, a permanent layoff rate identical to that obtained from LWF.

Appendix 2: Permanent layoffs of males: Logit model # 1

	Men aged 15-24		Men aged 25-34		Men aged 35-44		Men aged 45-54		Men aged 55-64	
Variables	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors
Intercept	-16.870	0.162	-1.462	0.199	-1.971	0.429	-2.217	0.877	1.586	1.777
Age										
age	13.067	0.158	-0.674	0.136	-0.359	0.219	-0.290	0.356	-1.692	0.601
age2	-2.989	0.038	0.076	0.023	0.028	0.028	0.028	0.036	0.160	0.051
Province										
nfld	1.502	0.011	1.247	0.010	1.238	0.011	1.256	0.014	1.353	0.020
pei	1.200	0.020	1.064	0.020	1.017	0.024	0.903	0.032	0.789	0.044
ns	0.772	0.010	0.642	0.009	0.599	0.011	0.512	0.015	0.457	0.021
nb	1.060	0.010	0.988	0.009	1.027	0.010	0.940	0.013	0.818	0.020
qc	0.557	0.005	0.454	0.005	0.457	0.005	0.443	0.007	0.444	0.009
man	0.247	0.011	0.081	0.011	0.019	0.013	-0.107	0.018	-0.094	0.023
sask	0.561	0.010	0.375	0.010	0.305	0.013	0.276	0.017	0.202	0.024
alta	0.492	0.006	0.498	0.006	0.520	0.007	0.531	0.009	0.455	0.013
bc	0.576	0.006	0.598	0.005	0.596	0.006	0.532	0.008	0.503	0.011
otherpr	0.069	0.021	0.058	0.017	0.236	0.020	0.320	0.027	0.463	0.041
Year effects										
y83	0.336	0.010	0.268	0.010	0.176	0.013	0.146	0.017	-0.045	0.021
y84	0.306	0.010	0.198	0.010	0.142	0.013	0.140	0.017	-0.038	0.021
y85	0.214	0.010	0.146	0.010	0.079	0.013	0.111	0.017	-0.026	0.021
y86	0.161	0.010	0.137	0.010	0.058	0.013	0.079	0.017	-0.077	0.021
y87	0.106	0.010	0.077	0.010	0.034	0.013	0.016	0.017	-0.072	0.021
y88	0.061	0.010	0.020	0.010	-0.001	0.013	-0.010	0.017	-0.065	0.022
y90	0.160	0.010	0.229	0.009	0.162	0.012	0.128	0.016	0.072	0.021
y91	0.194	0.011	0.284	0.009	0.222	0.012	0.165	0.016	0.146	0.021
y92	0.139	0.011	0.264	0.010	0.204	0.012	0.130	0.016	0.104	0.021
y93	0.086	0.011	0.203	0.010	0.159	0.012	0.113	0.016	0.084	0.021
y94	0.032	0.011	0.130	0.010	0.112	0.012	0.062	0.016	0.084	0.021
y95	0.054	0.011	0.126	0.010	0.129	0.012	0.089	0.016	0.125	0.021
y96	0.023	0.011	0.099	0.010	0.099	0.012	0.068	0.015	0.094	0.021
y97	-0.036	0.011	0.070	0.010	0.116	0.012	0.086	0.015	0.116	0.021
y98	-0.021	0.011	0.060	0.010	0.118	0.012	0.092	0.015	0.120	0.021
y99	-0.147	0.011	-0.043	0.010	0.042	0.012	0.029	0.015	0.086	0.021
Sample size	3,359,779		4,323,671		3,439,514		2,201,001		1,117,870	

Source: Longitudinal Worker File (10% version).

Appendix 2: Permanent layoffs of females: Logit model # 1

	Women aged 15-24		Women aged 25-34		Women aged 35-44		Women aged 45-54		Women aged 55-64	
Variables	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors
Intercept	-14.064	0.224	-1.958	0.303	-1.979	0.654	-1.406	1.376	-2.902	3.104
Age										
age	9.867	0.219	-0.838	0.208	-0.687	0.334	-0.978	0.560	-0.529	1.052
age2	-2.279	0.053	0.101	0.035	0.062	0.042	0.103	0.057	0.068	0.089
Province										
nfld	1.691	0.013	1.407	0.013	1.393	0.016	1.512	0.021	1.734	0.034
pei	1.378	0.025	1.245	0.026	1.165	0.031	1.168	0.040	1.240	0.062
ns	0.822	0.014	0.595	0.014	0.559	0.017	0.513	0.023	0.570	0.036
nb	1.044	0.014	0.958	0.014	0.952	0.016	0.844	0.022	0.982	0.034
qc	0.764	0.007	0.617	0.007	0.543	0.008	0.548	0.011	0.671	0.016
man	0.126	0.016	-0.014	0.017	-0.087	0.020	-0.137	0.026	-0.165	0.039
sask	0.194	0.017	-0.056	0.019	-0.115	0.022	-0.175	0.030	-0.207	0.044
alta	0.261	0.010	0.201	0.010	0.170	0.012	0.158	0.016	0.204	0.025
bc	0.626	0.009	0.560	0.008	0.440	0.010	0.466	0.013	0.614	0.019
otherpr	0.263	0.034	0.128	0.030	0.063	0.039	0.389	0.050	0.405	0.083
Year effects										
y83	0.373	0.015	0.223	0.016	0.215	0.021	0.227	0.028	0.118	0.039
y84	0.414	0.014	0.213	0.015	0.224	0.020	0.179	0.028	0.104	0.039
y85	0.285	0.015	0.151	0.015	0.194	0.020	0.157	0.028	0.020	0.040
y86	0.224	0.015	0.136	0.015	0.103	0.020	0.124	0.027	-0.021	0.040
y87	0.125	0.015	0.106	0.015	0.088	0.020	0.068	0.027	-0.006	0.039
y88	0.085	0.015	0.053	0.015	0.081	0.020	0.051	0.027	0.039	0.040
y90	0.095	0.015	0.185	0.015	0.208	0.018	0.174	0.025	0.152	0.037
y91	0.168	0.015	0.247	0.015	0.274	0.018	0.226	0.025	0.188	0.037
y92	0.202	0.016	0.266	0.015	0.261	0.018	0.204	0.025	0.254	0.037
y93	0.155	0.016	0.225	0.015	0.234	0.018	0.162	0.025	0.229	0.037
y94	0.121	0.016	0.184	0.015	0.180	0.018	0.054	0.025	0.152	0.037
y95	0.125	0.016	0.144	0.015	0.173	0.018	0.032	0.025	0.058	0.038
y96	0.160	0.016	0.175	0.015	0.169	0.018	0.049	0.025	0.077	0.038
y97	0.146	0.015	0.248	0.015	0.309	0.018	0.160	0.024	0.181	0.036
y98	0.053	0.016	0.175	0.015	0.219	0.018	0.077	0.024	0.096	0.037
y99	-0.034	0.016	0.066	0.015	0.159	0.018	0.036	0.024	-0.002	0.037
Sample size	2,955,613		3,466,874		2,895,590		1,805,052		711,562	

Source: Longitudinal Worker File (10% version).

Appendix 2: Permanent quits of males: Logit model # 1

	Men aged 15-24		Men aged 25-34		Men aged 35-44		Men aged 45-54		Men aged 55-64	
Variables	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors
Intercept	-12.122	0.137	-0.303	0.216	1.374	0.555	0.870	1.399	2.831	3.519
Age										
age	10.054	0.135	-0.634	0.149	-1.556	0.284	-1.142	0.570	-1.868	1.194
age2	-2.410	0.033	0.004	0.025	0.133	0.036	0.065	0.058	0.133	0.101
Province										
nfld	-0.875	0.020	-1.140	0.023	-1.224	0.033	-1.276	0.054	-1.091	0.090
pei	-0.801	0.033	-1.021	0.042	-0.968	0.059	-1.092	0.102	-1.090	0.174
ns	-0.475	0.013	-0.647	0.014	-0.715	0.020	-0.606	0.031	-0.587	0.055
nb	-0.506	0.014	-0.698	0.015	-0.732	0.022	-0.716	0.035	-0.700	0.063
qc	-0.114	0.005	-0.248	0.005	-0.315	0.007	-0.308	0.011	-0.303	0.019
man	-0.056	0.009	-0.123	0.010	-0.103	0.015	-0.071	0.023	-0.113	0.039
sask	-0.005	0.010	-0.114	0.011	-0.049	0.016	0.017	0.025	0.091	0.042
alta	0.286	0.005	0.205	0.006	0.296	0.008	0.468	0.013	0.523	0.022
bc	-0.059	0.006	-0.128	0.006	-0.067	0.008	0.035	0.013	0.086	0.021
otherpr	-0.611	0.022	-0.593	0.020	-0.337	0.027	-0.106	0.042	0.113	0.078
Year effects										
y83	-0.721	0.010	-0.643	0.011	-0.557	0.017	-0.510	0.026	-0.633	0.040
y84	-0.538	0.010	-0.481	0.011	-0.444	0.016	-0.474	0.025	-0.509	0.039
y85	-0.355	0.009	-0.312	0.010	-0.304	0.015	-0.293	0.024	-0.406	0.038
y86	-0.223	0.009	-0.243	0.010	-0.226	0.015	-0.248	0.024	-0.278	0.036
y87	-0.056	0.008	-0.045	0.009	-0.058	0.014	-0.043	0.022	-0.124	0.035
y88	0.029	0.008	-0.002	0.009	-0.006	0.014	-0.016	0.022	0.002	0.035
y90	-0.145	0.009	-0.147	0.009	-0.160	0.014	-0.192	0.022	-0.179	0.036
y91	-0.467	0.010	-0.458	0.010	-0.499	0.015	-0.482	0.024	-0.541	0.040
y92	-0.608	0.011	-0.576	0.011	-0.642	0.016	-0.633	0.025	-0.649	0.042
y93	-0.627	0.011	-0.572	0.011	-0.639	0.016	-0.695	0.025	-0.721	0.043
y94	-0.458	0.010	-0.368	0.010	-0.441	0.015	-0.514	0.024	-0.594	0.041
y95	-0.501	0.010	-0.391	0.010	-0.453	0.015	-0.503	0.023	-0.581	0.041
y96	-0.527	0.010	-0.359	0.010	-0.416	0.014	-0.474	0.023	-0.502	0.040
y97	-0.371	0.010	-0.189	0.010	-0.230	0.014	-0.323	0.022	-0.299	0.037
y98	-0.260	0.009	-0.101	0.010	-0.146	0.013	-0.252	0.021	-0.293	0.036
y99	-0.173	0.009	-0.051	0.009	-0.098	0.013	-0.160	0.020	-0.234	0.035
Sample size	3,359,779		4,323,671		3,439,514		2,201,001		1,117,870	

Source: Longitudinal Worker File (10% version).

Appendix 2: Permanent quits of females: Logit model # 1

	Women aged 15-24		Women aged 25-34		Women aged 35-44		Women aged 45-54		Women aged 55-64	
Variables	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors	Parameter Estimates	Standard errors
Intercept	-12.765	0.144	1.495	0.237	-0.995	0.583	-0.722	1.415	-1.519	3.831
Age										
age	10.670	0.142	-1.858	0.163	-0.393	0.298	-0.565	0.577	-0.450	1.300
age2	-2.556	0.035	0.206	0.028	-0.003	0.038	0.022	0.059	0.025	0.110
Province										
nfld	-0.607	0.018	-0.860	0.022	-0.871	0.030	-0.886	0.049	-0.684	0.098
pei	-0.618	0.032	-0.793	0.041	-0.779	0.055	-0.995	0.092	-0.834	0.169
ns	-0.225	0.012	-0.372	0.014	-0.459	0.020	-0.352	0.029	-0.374	0.057
nb	-0.285	0.013	-0.467	0.016	-0.532	0.022	-0.558	0.035	-0.627	0.071
qc	-0.121	0.005	-0.306	0.006	-0.323	0.008	-0.316	0.012	-0.226	0.022
man	0.032	0.009	-0.038	0.011	-0.023	0.014	-0.003	0.021	-0.001	0.038
sask	0.106	0.010	-0.102	0.012	-0.113	0.017	-0.083	0.025	-0.056	0.043
alta	0.367	0.006	0.241	0.006	0.292	0.009	0.378	0.013	0.509	0.023
bc	0.117	0.006	0.031	0.006	0.049	0.009	0.087	0.013	0.222	0.022
otherpr	-0.048	0.022	-0.135	0.022	-0.053	0.031	0.192	0.047	0.328	0.090
Year effects										
y83	-0.564	0.010	-0.447	0.012	-0.427	0.018	-0.409	0.027	-0.311	0.043
y84	-0.411	0.010	-0.356	0.012	-0.344	0.017	-0.295	0.026	-0.272	0.042
y85	-0.263	0.009	-0.209	0.011	-0.253	0.016	-0.179	0.025	-0.168	0.041
y86	-0.179	0.009	-0.154	0.011	-0.177	0.015	-0.133	0.024	-0.134	0.040
y87	-0.038	0.009	0.005	0.010	-0.027	0.014	0.025	0.023	-0.018	0.039
y88	0.031	0.008	0.028	0.010	0.053	0.014	0.051	0.022	0.032	0.039
y90	-0.076	0.009	-0.069	0.010	-0.104	0.014	-0.074	0.022	-0.151	0.039
y91	-0.346	0.010	-0.344	0.011	-0.405	0.015	-0.374	0.023	-0.360	0.041
y92	-0.495	0.011	-0.492	0.012	-0.567	0.016	-0.542	0.024	-0.487	0.043
y93	-0.540	0.011	-0.548	0.012	-0.681	0.016	-0.674	0.025	-0.686	0.045
y94	-0.452	0.011	-0.446	0.012	-0.564	0.016	-0.605	0.024	-0.690	0.045
y95	-0.440	0.011	-0.429	0.012	-0.594	0.016	-0.640	0.024	-0.747	0.046
y96	-0.521	0.011	-0.431	0.012	-0.588	0.016	-0.667	0.024	-0.693	0.045
y97	-0.397	0.010	-0.261	0.011	-0.411	0.015	-0.477	0.022	-0.520	0.042
y98	-0.261	0.010	-0.158	0.011	-0.301	0.014	-0.359	0.021	-0.440	0.040
y99	-0.186	0.009	-0.087	0.011	-0.200	0.014	-0.293	0.021	-0.462	0.040
Sample size	2,955,613		3,466,874		2,895,590		1,805,052		711,562	

Source: Longtudinal Worker File (10% version).

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